An Exploratory Study of the Registered Nurse's Role in Health Promotion relating to Cardiovascular Disease in Jordan

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By

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Abstract

Background: Obesity, smoking and sedentary lifestyles have led to a high prevalence of cardiovascular disease (CVD) in Jordan. This study aimed to examine the views of Registered Nurses (RNs), doctors and patients regarding the RNs' role legitimacy in health promotion relating to CVD and develop an explanatory model relating to the RNs' role legitimacy in Jordan.

Methods: A correlational cross-sectional survey was conducted using cluster random sampling at the sector level with proportional quota sampling within individual study sites. A sample (n=1726) of RNs (n=676), doctors (n=458) and patients (n=592) were recruited from community and hospital settings in Amman. Data were collected using structured self-administered questionnaires.

Findings: The RNs reported positive views regarding their role in health promotion relating to CVD and achieved high knowledge scores related to CVD. The doctors and patients, however, reported negative views regarding the RNs' role. The RNs' perceptions of general health promotion and their role in general health promotion together with personal health behaviours, were associated with their perceived role legitimacy in health promotion relating to CVD. Lack of time and perceived role together with limited health promotion training and communication problems with patients were constraints to the RNs' role.

Conclusion: The role legitimacy of the RNs in health promotion relating to CVD is limited in Jordan. It is important for professional bodies and healthcare employers to agree the RNs role in health promotion relating to CVD. Further examination of the barriers inhibiting the RNs role legitimacy in health promotion relating to CVD is crucial.

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Chapter One

Introduction

This thesis presents the first exploratory study of the role legitimacy of RNs in health promotion relating to CVD in Jordan. Chapter Two provides the background context for the research study. It starts with a statement of the problem, the prevalence of CVD across the world, the Middle East, and more specifically in Jordan. Health issues in Jordan and healthcare delivery are presented alongside an outline of nursing education, nursing practice and health promotion in Jordan. Chapter Three provides a critical review of current evidence from empirical literature, which includes an analysis of nurse-led interventions, nurses' and patients' perception of the nurses' role in health promotion relating to CVD. The current study used Shaw et al.'s (1978) conceptual framework, which was further developed by Machin and Stevenson (1997) to explore the role legitimacy of RNs in health promotion relating to CVD in Jordan.

Chapter Four sets out the study aim and objectives and the study methods including the study design, the study sites and settings, the study population and target sample, the sampling strategy (at the organisational and the individual levels), the study instruments, refinement, translation and piloting of the study instrument, rigor of the study (reliability and validity), ethical considerations, access to study sample and data collection procedure and data analysis.

The findings of the current study are presented in Chapters Five, Six and Seven. Chapter Five presents the findings relating to the demographic, personal and professional data of the three sample groups (i.e. RNs, doctors and patients). Chapter Six reports the findings relating to the general health promotion by RNs from the views of the three sample groups (i.e. RNs, doctors and patients) and from the RNs sample's

perspective. This chapter also presents the findings relating to the roles of different healthcare personnel from the views of the three sample groups (i.e. RNs, doctors and patients) and from the RNs sample's perspective. Chapter Seven reports the findings relating to health promotion relating to CVD by RNs from the views of the three sample groups (i.e. RNs, doctors and patients). Chapter Seven also presents the RNs sample's views of health promotion relating to CVD by RNs. This chapter also presents the developing of statistical models relating to general health promotion by RNs and relating to CVD.

Chapter Eight discusses the study findings focusing on the perceived role legitimacy of RNs in general health promotion and relating to personal health behaviours of the three sample groups (i.e. RNs, doctors and patients) and presents an explanatory model regarding the RNs' role legitimacy in general health promotion. Chapter Eight also discusses the findings of the current study, specifically the perceived role legitimacy of RNs in health promotion relating to CVD by healthcare sector, RNs' knowledge of CVD and personal health behaviours; and presents the explanatory model regarding the RNs' role legitimacy in health promotion relating to CVD. The conclusion chapter (Chapter Nine) summarises the implications of the study findings and recommends the direction of future research into RNs' role legitimacy in health promotion relating to CVD in Jordan.

Chapter Two

Background

2.1 Introduction

This chapter describes the research problem, namely the increasing prevalence of CVD worldwide, focusing on the Middle East and particularly Jordan. This is followed by a discussion of healthcare provision, the development of the nursing profession and nursing practice in Jordan, before a specific focus on nursing and health promotion practice within Jordan.

2.2 Statement of the research problem

No previous studies have examined the role legitimacy of RNs to undertake health promotion in relation to CVD in Jordan. The World Health Organisation (WHO) (2013a) highlighted that CVD is now one of the major health challenges of the twenty-first century, being a common cause of morbidity and mortality in the developed and developing worlds (such as Jordan). Research has shown that CVD is preventable, yet it remains one of the major causes of death across the world (WHO, 2013a). The term CVD refers to multiple chronic conditions, including coronary heart disease, cerebrovascular disease, peripheral artery disease, rheumatic heart disease, congenital heart disease, deep vein thrombosis and pulmonary embolism (WHO, 2013a). The primary risk factors for CVD are physiological, behavioural and psychological, and include hypertension, hypercholesterolemia, high blood sugar, diabetes mellitus, high serum cholesterol, unhealthy (high-fat) diet, obesity, physical inactivity, tobacco use, harmful use of alcohol and uncontrolled psychological stress (WHO, 2013a).

To date, most research on CVD has been conducted in the developed world, with comparatively few studies conducted in the Middle East, particularly Jordan. In

addition, historically, doctors have been responsible for health promotion in Jordan (Shuriquie et al., 2008). It is, therefore, essential to investigate the views of health professionals (i.e. RNs and doctors) and patients regarding the role legitimacy of RNs in health promotion relating to CVD in Jordan.

2.3 Prevalence of cardiovascular disease

2.3.1 Global

In 2008, it was estimated (WHO, 2013a) that 17.3 million people worldwide died from CVD, which accounted for 30% of all global deaths. Moreover, 7.3 million deaths were caused by coronary heart disease and 6.2 million were caused by stroke (WHO, 2013a). The prevalence of CVD differs between developed and developing countries due to a difference in lifestyles (Thom et al., 2006). In the developed countries, CVD-related deaths occur mainly among older people over 60 years of age. Additionally, age-adjusted CVD death rates are low, which might be due to strategic interventions, including the prevention of disease, fast delivery of care during an acute-manifestation of disease and rehabilitation following diagnosis of CVD (Gaziano, 2007).

In developing countries, however, higher prevalence rates of CVD can be attributed not only to increased risk factors of CVD but also a lack of effective preventive strategies. Equally, in low and middle-income countries, death rates from CVD are elevated in both older and younger populations (Gaziano, 2007). In these countries, limited access to effective healthcare services, including screening and early detection of disease, resulted in higher mortality rates (WHO, 2013a). The World Bank (2003) reported that in developing countries, CVD occurs mainly among the working age population (30-64 years of age). CVD is a prominent chronic disease which needs to be managed and

prevented, particularly in low and middle-income countries, given the high prevalence of CVD in these countries (WHO, 2013a).

By 2030, the WHO (2013a) estimates that CVD will account for 23.3 million deaths worldwide, primarily from heart disease and stroke, with the highest prevalence occurring in the Eastern Mediterranean Region. The onset of CVD is influenced by socioeconomic factors and it is estimated that over 80% of CVD deaths are located in low and middle-income countries (WHO, 2013a). The World Bank (2002) highlighted that high-income countries spend in the region of $2,700 per capita on healthcare, whereas low- and middle-income countries expend approximately $74 per capita (Gaziano, 2007). Squires (2000) proposed that people of low socioeconomic status have less knowledge regarding risk factors of CVD than people of high socioeconomic status, which may explain the different lifestyle and health choices between those with low and high socioeconomic status. For instance, in Jordan, people of high socioeconomic status are generally well educated and mainly reside in urban areas. In contrast, people of low socioeconomic status tend to have a lower level of education and live in rural areas. Ammouri et al. (2011) noted that the level of education can have an impact on people's knowledge of risk factors for coronary heart disease in Jordan, resulting in higher awareness of the risk factors among people with higher levels of education. There are also various economic, socioeconomic status (i.e. income level), cultural and gender differences in the epidemiology, treatment and outcomes of CVD (Waite, 2004).

2.3.2 Middle East region

Transformation of the food and agriculture sectors in the developing world has led to an increase in productivity and growth since the beginning of the 1960s (Schmidhuber and Shetty, 2003). Consequently, in the developing countries (e.g. the Middle East), there has been a dramatic increase in the average calorific consumption and protein consumption per capita from approximately 1,950 to 2,680 kcals/person/day and 40 to 70g/person/day respectively (Schmidhuber and Shetty, 2003). Urbanisation has also played an important role in the move towards an urban diet and more sedentary lifestyle (Schmidhuber and Shetty, 2003).

The Middle East region is positioned on the degenerative and man-made disease stage of the epidemiological transition, which is characterised by high fat and calorie consumption and extensive tobacco use, with chronic disease mortality rates exceeding deaths from infections and malnutrition (Gaziano, 2005). Eastern Mediterranean countries have experienced significant alterations in food consumption patterns and dietary habits. In particular, the consumption of both fats and calories has been increasing in the region (Musaiger, 2004).

The basic shifts in economic and demographic profiles of the countries (e.g. average lifespan increases beyond 50 years), along with the nutrition transition have resulted in an increase in mortality from CVD in particular and other non-communicable diseases (Gaziano, 2005). There has been a change in the lifestyles of urban dwellers in lower and middle-income countries to a more Western diet and lifestyle which is characterised by high dietary fat, sugar and salt (sodium) consumption, decreasing physical activity and increasing obesity (Popkin, 2003). The WHO (2013b) has highlighted that the

prevalence of risk factors for CVD is high in the Middle East Region with two out of five adults affected by hypertension. Additionally, the amount of salt and fat intake has increased in most countries in the Middle East, with the total fat intake accounting for between 35.9% and 38.9% of the total energy intake.

The United Nations Relief and Works Agency for Palestinian Refugees (UNRWA) (2010) conducted screening to assess the level of hypertension and hyperglycaemia and other risk factors in Palestinian refugees in four Middle East countries (the Gaza Strip and West Bank, Jordan, Syria and Lebanon), and reported that factors including smoking, obesity and family history were associated with the prevalence of hypertension and hyperglycaemia. Significantly, obesity had a strong correlation with non-communicable diseases including CVD. Similarly, a survey by Nabipour et al. (2008) found a low prevalence of healthy lifestyles in the Islamic Republic of Iran. The findings suggested that the majority of the study participants (n=3,723) from the northern Persian Gulf area reported the incidence of two CVD risk factors, including physical inactivity and unhealthy body weight. In addition, the consumption of both fruits and vegetables was below the recommended levels. The WHO (2007) STEPwise data on the chronic disease risk factors in the Eastern Mediterranean Region revealed the highest prevalence of smoking is in Jordan, with 29% of the population smoking daily; while overweight and obesity were high in Kuwait, Saudi Arabia, Iraq, Egypt and also Jordan (See Table 2.1). The level of daily physical activity was low in the region including Sudan, Egypt, Oman, Saudi Arabia, Iran, Kuwait, Iraq, Jordan and Syria (WHO, 2007).

Table 2.1: Chronic disease risk factors in the Middle East Region (STEPwise data, WHO 2003-2007).

Country	Year of field work	Cholesterol level ≥ 5.2mmoL/dl (%)	BMI≥ 25 (%)	Current daily smokers (%)	Daily activity ≤ 10 min (%)
Iran	2005	43.6	42.8	13.0	67.5
Kuwait	2005	38.6	75.4	20.6	64.7
Iraq	2005	37.5	66.9	21.6	56.7
Jordan	2007	36.0	57.0	29.0	51.0
Syria	2003	34.0	56.3	24.7	31.15
Oman	2006	27.6	29.6	9.3	69.9
Sudan	2005	19.8	53.9	12.0	86.8
Egypt	2005-2006	19.4	66.0	18.0	70.4
Saudi Arabia	2007	19.15	68.8	11.0	67.7

2.3.3 Jordan

In Jordan, the overweight and obesity levels reached 64.1% and 30% respectively in 2008 (WHO, 2013c). A large proportion of the Jordanian population also smoke, with 29% of adults smoking tobacco daily (49.6% male and 5.7% female) and 11.5% of youth (aged 13-15 years) currently smoking cigarettes (WHO, 2013c). In 2010, it was estimated that CVD was the leading cause of death in Jordan, accounting for 40% of all deaths in that particular year (WHO, 2013c). The Ministry of Health (MoH) in Jordan (2007) reported that the incidence of hypertension among Jordanian adults over 18 years old was 26%, while the prevalence of other diseases such as diabetes, impaired fasting glucose and hypercholesterolemia were 16%, 24% and 34% respectively (WHO, 2009).

Despite the fact that CVD is the leading cause of death in Jordan, the extent of knowledge about CVD among the Jordanian population appears unclear. A survey conducted by Ammouri et al. (2011) in four large cities in Jordan assessed the awareness of adult Jordanians on the risk of coronary heart disease and its relationship to demographic variables and health behaviours. Significantly, almost half of the

participants (n= 294) demonstrated a lack of knowledge regarding the risk of coronary heart disease, particularly women and young people. Similarly, a recent study by Eshah (2011), using a convenience sample (n=250) aimed at identifying the level of adoption of healthy lifestyle behaviour among Jordanian adults, and found that 50% of the participants had excess weight; 53% had never assessed their cholesterol level; 30% were current smokers; and 33% reported having a family history of coronary heart disease. These results suggest that there is clearly a need for health promotion relating to CVD among the general population in Jordan.

2.4 Jordan-profile

Jordan is a developing country with a population of 6,388,000 in 2012 (MoH, 2013a). The majority of the population (82.6%) live in urban areas, with the majority (71.5%) located in Amman, Zarka and the Irbid Governorates (WHO, 2009). The large majority (92%) of Jordanian people are Muslims. Christians comprise about 6%, and other religious backgrounds compose the remaining 2% of the population. Jordan is experiencing demographic changes, with a total fertility rate of 3.5, a basic birth rate of 28.1 per 1,000 of the population, a death rate of 7 per 1,000 of the population and a 2.2% growth rate in population per year (MoH, 2013a). The population is expected to increase twofold within the next 30 years (WHO, 2009).

2.4.1 Health in Jordan

Jordan has witnessed significant achievements in reducing mortality rates and increasing the average life expectancy. These achievements were mainly due to positive preventive health policies and expansion of health services (United Nations Children's Fund, 2007). Life expectancy at birth in both males and females has increased from 63.7 years in 1980-1985 (United Nations Statistics Division, 2009a) to 74.5 (female) years

and 70.8 (male) years in 2005-2010 and it is expected to rise in the future (United Nations Statistics Division, 2009b). Notably, the infant mortality rate has dropped significantly from 82:1000 births in 1970 to 19.4:1000 births in 2010. The under five years of age mortality rate has also declined from 61.3:1000 births in 1980 to 18.3:1000 births in 2010 (United Nations Statistics Division, 2009c). The demographic trend, however, of increased old age and reduced mortality rate is likely to increase the demand for healthcare services and healthcare professionals in Jordan.

Along with a significant population change, Jordan has been moving through a nutrition transition with a steady increase in the levels of obesity, which is reflected in the number of people who die every year as a result of CVD and diabetes mellitus (Madanat et al., 2008). Currently, Jordan faces many challenges and the main one, as highlighted by the WHO (2009), is building and maintaining a healthcare system that focuses on the prevention and treatment of chronic and non-communicable diseases, including CVD.

2.4.2 Healthcare delivery

The health services in Jordan comprise multiple providers, namely: public sector; private sector; and Royal Medical Services (RMS). Additionally, the UNRWA provides primary healthcare services to the registered Palestinian refugee population in Jordan.

The public sector is Government funded, offering primary, secondary and tertiary services through a number of healthcare centres, clinics and hospitals distributed throughout the country. This sector provides healthcare services to the public via 31 hospitals and two large teaching hospitals, and charges minimum fees (MoH, 2013b). The public hospitals represent 41.8% of hospital beds in Jordan (MoH, 2013b). The primary healthcare services are delivered through 92 comprehensive healthcare centres and 372 primary healthcare centres in Jordan (MoH, 2013c). The average length of stay

in public hospitals ranged from 3.2 days to 4.0 days in 2009, with an average occupancy rate of 69% and 65% in public hospitals and teaching hospitals, respectively (United States Agency for International Development, 2011).

The private sector offers primary, secondary and tertiary services via private clinics and hospitals distributed throughout the country, with the majority of hospitals located in Amman (39 hospitals). This sector, where clients usually cover their costs, is made up of 61 hospitals representing 36.6% of the hospital beds in Jordan (MoH, 2013d). It has the highest level of the country's medical expertise, combined with high technical capability and high quality services (WHO, 2009). The average length of stay in 2009 was 2.2 days and average occupancy rate was 51% (United States Agency for International Development, 2011).

The RMS provides healthcare and health insurance for active and retired military workers and their families. It also offers health services for uninsured patients who are usually transferred from public and private hospitals to be treated, without charging fees. It provides comprehensive health insurance via 12 hospitals, representing 21.6% of hospital beds in the country (Jordanian Royal Medical Services, 2013).

The Ministry of Health has developed health strategies to ensure a comprehensive health system in Jordan via both the public and private sectors, to ensure secondary and tertiary care meet the needs of the population (Zahran, 2010). The healthcare system in Jordan is, however, distinguished by centralisation of organisational structures and "lack of competition for patients except in private hospitals" (Mrayyan, 2005: p.41). Shuriquie et al. (2008) explained that the centralised organisational structure of both RMS and public sectors could be due to the greater size of these sectors. Despite Jordan being one of the best training centres for health professionals in the Middle East Region,

the healthcare system is not well-developed regarding the management of human resources including hiring and promotion. In addition, there is no standard level of continuing education and a lack of coordination between training organisations and health service providers (WHO, 2009).

2.4.3 Nursing

Shukri (2005) has highlighted that in Arab countries, the nursing profession has become one of the most respected professions. However, in Jordan, the nursing profession is not fully respected by the general public. Despite being a popular occupation because of its employment prospects (Mrayyan and Al-faouri, 2008), it retains a low social status due to its "menial" image and limited autonomy of nurses relative to medicine within the healthcare hierarchy of Jordan. A further problem, as the WHO (2009) highlighted, is that the general adult unemployment rate in Jordan reached 14.3% in 2007, with the highest rates among women (25.4%) and young people (51.3%), which has increased the trend for Jordanian nurses to leave the country to work in other Arab countries (Mrayyan and Acorn, 2004; Hayajneh et al., 2009; Shoqirat and Cameron, 2012).

In Jordan, nurse education and practice are regulated by two professional bodies, the Jordan Nurses and Midwives Council (JNMC), and the Jordanian Nursing Council (JNC). The JNMC was established in 1972 as the statutory body, which requires nurses to register and issues a license to practice (Zahran, 2010). Only nurses who have a Bachelor degree in nursing are eligible to be registered with the JNMC. The JNMC aims to improve the nursing profession and its practice by developing nursing standards and recommending policies for nurse education (Zahran, 2010). The JNC was established in 2002 to promote nursing services by supporting the profession and supporting scientific research to enhance people's health and protect their lives (JNC,

2011a). The JNC focuses on the development of the nursing profession by promoting competency measures and skill levels of RNs through job descriptions, continuing education and licensing exams for nursing practice (Zahran, 2010).

2.4.3.1 Nurse education and training

The nursing profession in Jordan dates back to 1952 when the Ministry of Health established the first nursing school to offer a diploma programme. The Princess Muna College of Nursing (PMCN) was instituted in 1962, running a nursing diploma programme and preparing nurses to work in military hospitals across the country. The PMCN was mostly staffed by British and American teachers, courses were conducted in English, and the curriculum was based upon the British model (Shuriquie et al., 2007). University-based nurse education began with the foundation of the Bachelor of Science in Nursing (BSN) degree in 1972. A second BSN programme was established in 1983 in the Jordan University of Science and Technology (JUST), situated in Irbid.

In 1989, an important project was organised between JUST and the University of Windsor in Canada and the result was the establishment of two sequential 4-year nurse education and clinical training partnerships. This project aimed to increase the capability of the JUST faculty of nurse education and develop nursing practice in North-East Jordan. Another two colleges, Rufaida El-Islamiyya College in Amman and Nusaiba El-Maziniyya College in the northern city of Irbid, were also established to award diploma programmes in nursing in 1984 (Shuriquie et al., 2007).

In 1998, all diploma programmes were terminated and the BSN degree became the required educational award to enter nursing at the professional level. The high demand for nurse education has led to the establishment of new BSN degree programmes by private and public universities, increasing the number from two to eight programmes.

Bridging programmes were introduced to facilitate progression from a diploma to a BSN degree (Shuriquie et al., 2007). Postgraduate education in nursing commenced in 1984 with the establishment of a Master of Science in Nurse Education (Shuriquie et al., 2007). In the first university-based nursing programmes, only female students were allowed to enrol. Male students became eligible to join the programme in 1982, accounting for 20% of the overall number of students (Ahmad and Alasad, 2007). In 2005, the University of Jordan established the national PhD programme in nursing.

In 2005, the JNMC reported that the total number of male students enrolled on BSN programmes was approximately 65% (Ahmad and Alasad, 2007). This increased demand has transformed the profession from a female-dominated profession to one in which male nursing students exceed female nursing students (Ahmad and Alasad, 2007). The JNMC (2006), in association with the Ministry of Higher Education, proclaimed a stop to the licenses being granted to the colleges responsible for the establishment of nursing assistant courses and conveyed the decision of the Ministry of Health to cancel these courses. They also agreed to raise the admission criteria for entrance to the colleges of nursing to at least a 75% grade in the high school final exam (Tawjihi) and increase the proportion of female recruits to a minimum of 50% in order to cover the needs of hospitals (JNMC, 2006). The JNC (2011b) has recognised the challenges of nursing education in Jordan and recommended the review of the teaching-learning methods with a focus on critical thinking, problem solving and creativity; a review of the role of faculty members to enable students to have an active role in obtaining their information; and a review of the established entry criteria into nursing.

The establishment of specialist nurse training in Jordan commenced in 1980, funded and managed mainly as foreign investment projects of the German Federal Republic (GFR), Italy and American governments (Shuriquie et al., 2007). The GFR project, for instance,

offered short and long term clinical courses in 1986. In 1988, the USaid project established the Institute for Specialist Nursing together with two postgraduate diploma programmes to develop training and primary healthcare in Jordan (Shuriquie et al., 2007). The Italian project started in 1989 and established the Institute of Clinical Training and a Clinical Instructor postgraduate Diploma programme. The RMS sector was the first to provide specialised programmes, such as a six months critical care programme in association with the GFR project in 1986. Additionally, the RMS frequently sponsors nurses to attend specialist training abroad with an average of 30 to 50 nurses visiting the UK and USA annually (Shuriquie et al., 2007). More recently, the public sector has established eight nursing development units to meet nurses' needs for continuing professional education. In addition, the private healthcare sector usually offers short courses of continuing professional education for nurses in order to meet their immediate staffing needs (Shuriquie et al., 2007).

2.4.3.2 Nursing practice

Nursing activities in Jordan are mainly provided in hospitals with limited nursing services provided by primary healthcare centres (Zahran, 2010). It is estimated that over 90% of nurses work in hospitals with around 10% working in primary healthcare centres. Nursing practice in Jordan faces several challenges including high workloads, inter-professional conflicts and a lack of autonomy and staff support (Mrayyan and Acorn, 2004; Shuriquie et al., 2008). The JNC (2011b) has noted that the application and commitment of guidelines and policies of nursing legislation in practice are weak. For example, nursing clinical specialist programmes (i.e. Masters degree) are not recognised by health institutions, therefore, the majority of those specialist nurses are usually employed in Schools of Nursing at universities (JNC, 2011b).

Gender issues have also been found to negatively influence clinical practice in Jordan. Nursing in Jordan is seen primarily as a female profession (Al-Ma'aitah et al., 1999; Ahmad and Alasad, 2007; Shuriquie et al., 2008). There is some evidence to suggest that more male nurses intend to change their career, compared to female nurses who intend to stay in the profession longer (Shuriquie et al., 2008; AbuAlRub, 2010). This could reflect cultural factors in Jordan where men have more choice, such as travelling abroad to work, than women who usually live with their families or spouses. Miller and Petro-Nustas (2002) have highlighted that the woman's role in Jordan is primarily that of caregiver and teacher in the family.

A descriptive survey by Mrayyan (2005) examined variations in job satisfaction and retention between the public and private sectors in a convenience sample of nurses (n=438) working in hospitals across Amman and a large district in Jordan. The findings revealed that nurses working in the private hospitals demonstrated higher job satisfaction and higher intention to remain in their jobs than nurses working in the public hospitals. In contrast, in the public hospitals, nurses were found to have better external rewards such as salaries and co-workers relationship than those employed in the private hospitals. However, Mrayyan's (2005) sample was recruited from two cities, Amman and a large district (unknown), and almost 60% of the sample was recruited from private hospitals.

Similarly, Shuriquie et al. (2008) has also surveyed Jordanian nurses' perceptions of their roles in clinical practice, recruiting a sample of participants (n=348) from six hospitals across the three main healthcare sectors (i.e. public, private and RMS) in Jordan. The study highlighted that nurses working in the public and RMS hospitals reported higher rates of intention to leave the profession than those working in the private hospitals. In addition, almost half of the sample highlighted that the nursing

profession was not their first choice of career. Possible explanations for such findings include the centralised organisational structure and poorly organised nursing care in public hospitals, which may have caused less job satisfaction (Mrayyan, 2005; Shuriquie et al., 2008). Shuriquie et al. (2008) recruited nurses from the RMS and there is limited literature on the nurses' role within this sector. Notably, there is a variation in the process of recruiting and hiring of nurses across the three healthcare sectors, with particular difficulties experienced in both the public sector and RMS.

Hayajneh et al. (2009) investigated the turnover rates among RNs (n= 2,126) in Jordan. Their study randomly selected 21 hospitals (five from the northern region, 13 from the middle region, and three from the southern region) from all the public and private hospitals in Jordan, excluding the RMS. Significantly, the overall turnover rate of the RNs was 36.6% during a one-year period. The turnover rate was significantly higher in the hospitals located in the urban areas, as compared with the hospitals located in rural areas ($p<0.0005$). Additionally, the turnover rate was significantly higher in the private hospitals than in the public hospitals ($p<0.0005$). The higher turnover rates in private hospitals could be explained by factors including low salaries and benefits, work overload and the geographical position of private hospitals which are mainly located in the cities (Amman, Irbid and Zarqa) (Hayajneh et al., 2009). The majority of private hospitals are located in the main cities where the opportunities for changing jobs are higher than in public hospitals, which are located in rural and urban areas. Hayajneh et al. (2009) reported that nurses in rural areas rarely changed their jobs since they were often resident in the local area.

It is worth noting that Hayajneh et al.'s (2009) study findings contradicted both those of Shuriquie et al.'s (2008) and Mrayyan's (2005) studies in terms of Jordanian RNs' job

satisfaction. Hayajneh et al. (2009) used a cluster random sampling technique to select the hospitals from three regions in Jordan, in contrast to the smaller convenience samples of Shuriquie et al. (2008) and Mrayyan (2005). However, the dates of data collection for the three studies were some years ago with both the Shuriquie et al. (2008) and Mrayyan (2005) studies deriving their data from 2003, whereas Hayajneh et al.'s (2009) data were collected between 2006 and 2007.

2.5 Health promotion within nursing practice in Jordan

In Jordan, health promotion is still in its infancy and requires further development. There is a shortage of studies that have explored the role of nurses in health promotion in Jordan. Al-Ma'aitah et al. (1999) asserted that knowledge regarding health promoting behaviours in Arab-Muslim countries is limited. Haddad et al. (2004) emphasised that defining health as the absence of disease is still the norm in Jordan and little emphasis has been placed on health and health-promoting behaviours. Additionally, counselling and psychological services are not fully established in Jordan. Al-Ma'aitah and Momani (1999) have stressed that discharge planning and communication skills including counselling and teaching do not feature in nursing practice. Indeed, the role of nurses in Jordan is limited to providing basic nursing activities and the distribution of medications. Shuriquie (2006) has asserted that the Jordanian culture has a negative influence upon health education because having faith in God and acceptance of one's fate are culturally accepted passive coping strategies in Jordan, rather than proactive "information-seeking" and "problem-solving" (p.306). The culture in Jordan is slow to change and this is an important factor which needs to be addressed.

An earlier survey by Haddad and Umlauf (1998) measured nurses' and midwives' perceptions of health promotion using a translated version of Littlewood and Parker's

(1992) questionnaire. The nurses (n=104) were recruited from primary healthcare centres in one city in Jordan. The study highlighted the importance of cultural attitudes in Jordan hindering effective health promotion in practice. Over 90.4% of the participants agreed that doctors were "ideally placed" to perform health promotion with fewer (77.9%) reporting that nurses are the appropriate healthcare professionals to deliver health promotion activities. Almost half of the participants raised the issue of the inability to change patients' health-related behaviours since the national culture has a strong impact upon lifestyle in Jordan. Additionally, the participants demonstrated a lack of willingness to deliver health promotion due to inadequate time and the patients' reticence to discuss aspects of their lifestyle, such as smoking.

The findings of Haddad and Umlauf's (1998) study are similar to other studies in other parts of the world which have found that a lack of time (Burns et al., 2000) and patients' low motivation levels (Burns et al., 2000; Douglas et al., 2006; Buchholz and Purath, 2007) have negative influences on delivering health promotion. Significantly, issues including a lack of time (Shuriquie et al., 2008; Hayajneh et al., 2009) and increased workload (Hamaideh et al., 2008) have been reported in clinical practice in Jordan. Given the absence of literature regarding the nurses' role in health promotion, this early study by Haddad and Umlauf (1998) provides vital evidence-base regarding the nurses' role in health promotion in Jordan.

An early study by Al-Ma'aitah et al. (1999) noted that in Jordan, there is little emphasis on health promotion activities and communication skills within nursing care in comparison to other dimensions, such as direct clinical patient care. Significantly, delivering health promotion in Jordan is not part of the current nurses' role. Instead, this responsibility falls to the doctors (Haddad and Umlauf, 1998). This is supported by Shuriquie (2006) who explored the legitimate role of the medical-surgical staff nurses in

Jordan. The findings revealed that the legitimate role of RNs was perceived to be mainly in the physical domain while performance of psychosocial activities including health promotion was found to be a doctor's role. Shuriquie (2006) found that patients viewed doctors as leading on issues related to care quality and as their primary source of health information. Other findings have suggested that Jordanian nurses are unlikely to engage in health promotion activities, including, for example, smoking cessation (Merrill et al., 2008; Shishani et al., 2011). In other parts of the world, however, studies indicate that health promotion is an important aspect of the nurses' role (Reeve et al., 2004; Whitehead et al., 2008).

A recent mixed method study (Shoqirat and Cameron, 2012) of Jordanian hospital nurses (n=58) recruited from one teaching hospital found limited practice of health promotion by nurses. They added that barriers to health promotion included lack of time, lack of knowledge in health promotion and lack of health promotion vision in job description. This study, however, recruited a small sample size from one hospital, limiting generalizability of the findings. Additionally, nurses working in teaching hospitals represent 9% of hospital beds in the country (MoH, 2013b).

Personal health behaviours of nurses can have a negative influence on the delivery of health promotion as indicated in different studies across the world (Gomm et al., 2002; Hodgetts et al., 2004; Hall et al., 2005). In Jordan, Shishani et al. (2011) surveyed the smoking patterns of nurses (n=667) and doctors (n=250) in a convenience sample of 918 health professionals working in ten public and private hospitals (in the north, south and capital of Jordan). Almost 75% of the participants highlighted positive attitudes associated with delivering health education to promote smoking cessation. In addition, 64.1% of the participants reported that it is less likely that health professionals will offer health education related to smoking cessation if they smoke. Notably, 36.1% of the

nurses in Shishani et al.'s (2011) study were active smokers. Additionally, the male nurses reported higher smoking rates than the female nurses. Thus, the personal health behaviours of those nurses were reflected in their health promotion activity.

Similarly, Merrill et al. (2008) sampled nurses (n=262) in three private and one public hospital in Amman, and doctors (n=251) randomly selected from the Jordan Medical Association (JMA) in Jordan. The purpose of this study was to compare Jordanian nurses' and doctors' preparedness and behaviours relating to promote smoking cessation. The findings revealed that nurses were less prepared to provide health education on smoking cessation and were more likely to be smokers than doctors. It is worth noting that the nurse sample of the study was recruited from Amman, while the doctors were recruited randomly from the Jordan Medical Association. Possible explanations for the unhealthy lifestyle behaviours such as smoking could be related to, for example, workload pressures (Hamaideh et al., 2008), and/or less supportive working environments in clinical practice (Shuriquie, 2008).

2.6 Summary

Jordan is a developing country which has limited financial and health resources, accompanied with growing healthcare needs related to high rates of obesity, smoking and sedentary lifestyle, leading to a high prevalence of CVD. In order to change the lifestyle behaviours of Jordanian adults, health promotion needs to grow in prominence within the healthcare provision of Jordan. The high prevalence of CVD gives RNs an important potential role in health promotion. However, to date it seems that nurses in Jordan have a limited role in health promotion (Shuriquie 2006; Shoqirat and Cameron, 2012). Indeed, the limited evidence suggests that health promotion in Jordan is mainly within the doctors' domain of practice. Clarification of the RNs' role in health

promotion is a priority, particularly with the increased prevalence of chronic diseases including CVD. Therefore, this study seeks to explore the RNs' role in health promotion related to CVD from the perspectives of RNs, doctors and patients, focusing on the area of role legitimacy.

Chapter Three

Literature Review and Conceptual Framework

3.1 Introduction

This chapter presents a review of the empirical literature relating to activities of nurses, and perceptions of both nurses and patients regarding health promotion relating to CVD by nurses. The strategy of searching the databases and the key terms used are described. The analysis of the selected empirical studies is presented. The literature review is divided into nurse-led interventions, nurses' perceptions and patients' perceptions of nurses' role in health promotion relating to CVD. The CONSORT statement, the STROBE statement and the COREQ checklist were used to evaluate the reporting methodological quality of the selected studies. This chapter also outlines the conceptual framework used for this study.

3.2 Search strategy

A systematic approach to the literature search was utilised with a combination of key terms comprising "cardiovascular disease", "nurses" and "health promotion". Similar terms (heart disease, myocardial infarction, heart attack, coronary heart disease, CVD, heart failure, nurses, nurse's role, nursing staff, staff nurse, Registered Nurse, health education, patient education and cardiac rehabilitation were used to ensure maximum coverage on the nurses' role in health promotion relating to CVD. The terms "Nurses" and "cardiovascular disease" were used in searching the literature review since the study focuses on the nurses' role in relation to CVD. The term "health promotion" was included in the search strategy since this term is considered part of the nurses' role (Reeve et al., 2004; Park, 2005; Kelley and Ibraham, 2007).

Empirical studies in the English language published between 2000 and 2014 involving adults (i.e. 18 years and over) were identified through searching Medline, Cinahl, PsycINFO and Education Resources Information Centre (ERIC) databases. Studies published in English were included.

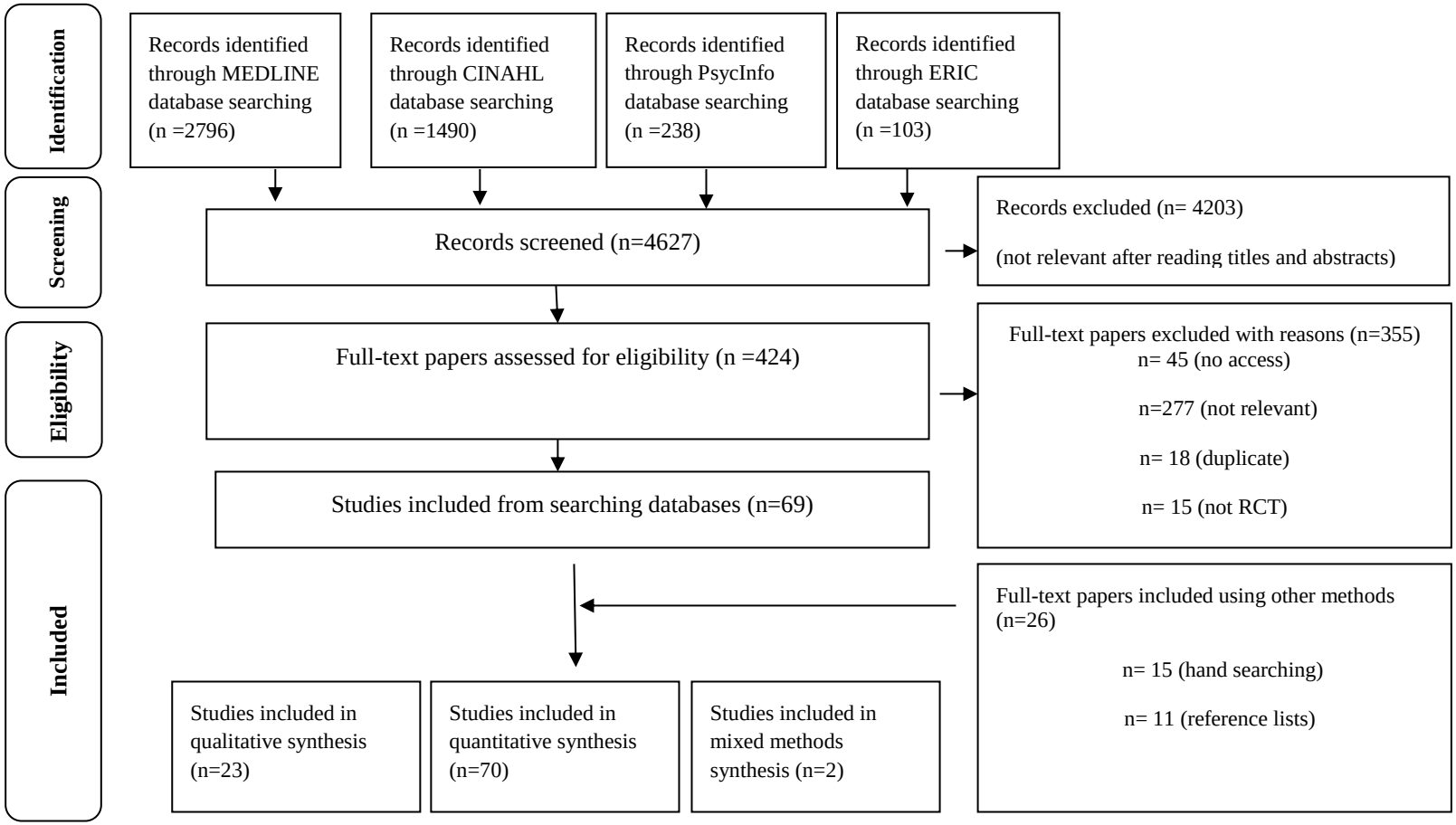
Subsequently, both titles and abstracts of papers identified in each database were screened to identify the eligible studies before reading the full text. Duplicate studies were removed. The reference lists of the included papers were examined to identify any additional studies that may have been missed through the database search. Sixty nine studies were relevant from the search of the four databases (See Table 3.1). Additionally, 11 further studies were identified as relevant from the reference lists. Fifteen studies were identified from hand searching of journals, for example, the European Journal of CVD Nursing. The selection process of included studies is presented in Figure 3.1.

Evidence-based practice involves synthesizing the best available research evidence with recognition of patient preferences and professional expert opinion (Evans, 2003). The "hierarchy of evidence" ranks different research designs to the extent that they reduce bias that may affect the findings of the research. The randomised control trial (RCT) design is considered the most robust form of evidence to provide guidance for practice on an aspect of care (Evans, 2003).

Table 3.1: Search Results

	Medline			**PsychINFO**			**ERIC**			**Cinahl**		
Search	**CVD**	**Nurses**	**Health Promotion**	**CVD**	**Nurses**	**Health Promotion**	**CVD**	**Nurses**	**Health Promotion**	**CVD**	**Nurses**	**Health promotion**
Combined search	2796			238			103			1490		
Search with inclusion criteria	772			108			18			418		
Empirical relevant papers	36			24			4			23		
Duplicate Studies	9			8			0			1		
Included Papers	27			16			4			22		
Total	69											

Figure 3.1 Literature identification process (PRISMA 2009 Flow Diagram)



3.3 Literature review key elements

A total of 95 published studies were selected for review in this chapter. These were divided into two categories, i.e. nurse-led interventions (n=52) using RCTs to investigate the effectiveness of nurse-led interventions in patients with CVD; and observational studies (n=43) which explored nurses' role in health promotion relating to CVD from the perspective of nurses and patients. The inclusion and exclusion criteria for the selection of nurse-led interventions and observational studies are presented in Table 3.2.

Table 3.2: Inclusion and exclusion criteria for literature search strategy

	Inclusion criteria	**Exclusion criteria**
Nurse-led interventions studies	• Published studies testing the effect of nurse-led interventions. • Published studies which included adults (i.e. 18 years and old) with heart disease/ with CVD risk factors. • RCTs that reported clear study design, data collection procedure (s) and key findings. • Studies published between 2000 and 2014 in English.	• Not primary research • Studies which were not RCTs
Observational studies	• Published studies focused on nurses' beliefs, attitudes, perceptions and practice of their role/ activities in health promotion relating to CVD. • Published studies focused on adults/patients beliefs, attitudes and perceptions of nurses' role/activities in health promotion relating to CVD. • Studies which included adults (i.e. 18 years and old) or nurses in the sample populations. • Published studies that reported clear study design, data collection procedure (s) and key findings. • Studies published between 2000 and 2014 in English.	• Not primary research • Studies which did not report a clear study method • Not relevant to literature review focus

The CONSORT statement was used to evaluate the reporting of RCT studies (n=52). The CONSORT statement is a guideline providing a minimum set of recommendations for reporting RCTs (Schulz et al., 2010). The CASP tool was then used to evaluate the methodological quality of each selected RCT study. The STROBE statement (Elm et al., 2008) was utilised to assess the quality of reporting observational studies and the CASP tool was then used to evaluate the methodological quality. Evaluation of the reporting qualitative studies was performed using and the COREQ checklist (a 32-item checklist, Tong et al. 2007) and the CASP tool was then used to evaluate the methodological quality of each qualitative study.

3.3.1 Nurse-led interventions (RCTs)

The RCTs of nurse-led interventions were conducted in different settings including hospitals (n=21) and primary/community healthcare centres (n=31) and in different countries including Australia (n=4), Canada (n=6), China (n=2), Germany (n=1), Mexico (n=1), Netherlands (n=3), New Zealand (n=1), Norway (n=2), Sweden (n=4), Taiwan (n=1), the UK (n=11) and the USA (n=19).

3.3.1.1 Assessment of methodological quality

Rating of the methodological quality of each selected RCT study was performed according to explicit criteria (i.e. the CASP appraisal tool and the CONSORT statement), including explicit reporting of methodological intervention; sample size based on explicit power calculation; inclusion criteria for participants; factors other than those experimentally manipulated held constant; and data presented in sufficient details. The majority of the RCTs (n=36, 69%) were of moderate quality; 13 (25%) were of strong quality; and three (6%) were of weak quality (See Table 3.3). The methodological weaknesses in the moderate quality RCT studies included the use of

self-report questionnaires, one study site and an un-blinded RCT design. The weak studies (n=3) used, for example, single study site with a small and underpowered sample size. The details of strengths and limitations of each selected RCT study is presented in Appendix 1.

3.3.1.2 Mode of the nurse-led interventions

A range of modes of nurse-led interventions were identified in the literature. They were classified into three modes: face-to-face interventions; telephone call interventions; and remote interventions (video calls or emails). Of the 52 studies, 19 studies (e.g. Allison et al., 2000; McHugh et al., 2001; Moher et al., 2001) used a face-to-face intervention, eight studies (e.g. Dougherty et al., 2004; Rudd et al., 2004; Tranmer and Parry, 2004) used a telephone call intervention, one study (i.e. Woodend et al., 2008) used a remote intervention, 16 studies (e.g. Jaarsma et al., 2000; Harrison et al., 2002; Hartford et al., 2002) used both telephone calls and face-to-face interventions, two studies (i.e. Jerant et al., 2001; Artinian et al., 2007) used telephone calls and remote interventions, four studies (i.e. Moher et al., 2001; Stromberg et al., 2006; Holst et al., 2007; Brenna et al., 2010) used face-to-face and remote interventions, one study (i.e. Sol et al., 2008) used a telephone call or a face-to-face intervention and one study (i.e. Han et al., 2010) used face-to-face, telephone calls and remote interventions (See Table 3.3).

Table 3.3: Selected nurse-led intervention studies (RCTs) for literature review

No.	Author, year and country	Study design and sample	Intervention, frequency and duration	Measurements	Outcomes	Quality of study
1.	Allison et al. (2000) USA	Two groups RCT post-unstable angina M and F not age restricted Intervention group n=158, age 57±13 years Control group n=168, age 59 ± 14 years	Face to face: 3 times; 6-8 days post-discharge, another 25-35 days, last 24-28 weeks post-discharge. Duration: 60 minutes	Baseline, T1 (6 months)	Body weight (improved p=0.0071), cholesterol level (improved p<0.0001), physical activity (improved p=0.0491) and smoking cessation (no effect)	Moderate
2.	Anderson et al. (2006) Australia	Two groups RCT adults with high risk of CVD only F age 45-60 years Intervention group n=47 Control group n=66	Face to face: 2 times/ one session on the first day and second session at the end of 12-week. Duration: 40 minutes	Baseline, T1 (12 weeks)	Adherence to physical activity (improved not significant), body weight (improved p<0.05), BP (improved not significant), physical activity (improved p<0.05) and smoking cessation (improved p<0.05)	Strong
3.	Artinian et al. (2007) USA	Two groups RCT post- hypertension M and F not age restricted Intervention group n=194 mean age 59.1±13.0 years Control group n=193 mean age 60.02±12.3 years	Telephone and remote: automated follow-up and telephone counselling weekly/3months for 16.2 minutes, then monthly between 4 and 6 months for 9.6 minutes, then once at 8 months for 8.7 minutes.	Baseline, T1 (3 months), T2 (6 months), T3 (12 months)	BP (improved p<0.04)	Strong
4.	Bosworth et al. (2005) USA	Two groups RCT post-hypertension M (98%) and F (2%) not age restricted Intervention group n=294 mean age 63 years Control group n=294 mean age 64 years	Telephone: every 2 months for 24 months. Duration: average call 3.7 minutes	Baseline, T1 (6 months), T2 (24 months)	Adherence to medications (improved not significant) and disease knowledge (improved p=0.007)	Moderate

No.	Author, year and country	Study design and sample	Intervention, frequency and duration	Measurements	Outcomes	Quality of study
5.	Bosworth et al. (2009) USA	Four groups RCT post-hypertension M (98%) and F (2%) mean age 63 years not age restricted Tailored behaviour intervention (nurse) group n=144; Combined provider system and tailored behaviour intervention n= 150 Hypertension reminder control group n= 143 Provider decision support system n= 151	Telephone: 1 week after the discharge, then every 2 month over 24 months. Duration: average call 3.2 minutes	Baseline, T1 (6 months), T2 (12 months), T3 (18 months), T4 (24 months)	BP (improved not significant)	Moderate
6.	Brennan et al. (2010) USA	Two groups RCT post- cardiac disease M and F mean age 64 years (age range 28-93 years) Intervention (technology-enhanced practice) group n= 146; Control group n=136	Face to face and remote: face to face ranging from 1-9 visits tailored to specific patients' needs; website source of information, participants accessed from 0 to 314 times over 24 weeks. Duration: N/R	Baseline, T1 (1 week), T2 (4 weeks), T3 (8 weeks), T4 (12 weeks), T5 (24 weeks)	Quality of life (no effect) and self-care management behaviour and satisfaction (no effect)	Moderate
7.	Burton and Gibbon (2005) UK	Two groups RCT post-stroke M and F not age restricted Intervention group n=87 mean age 75.8 years; Control group n= 89 mean age 74.7 years	Face to face and telephone: Face to face: 1 time/ 2nd day of discharge. Telephone: 3/2 months. Duration: N/R	Baseline, T1 (3months), T2 (12 months)	Depression (no effect) and quality of life (improved $p<0.001$)	Strong

No.	Author, year and country	Study design and sample	Intervention, frequency and duration	Measurements	Outcomes	Quality of study
8.	Carrol and Rankin (2006) USA	Three groups RCT post- myocardial infarction M and F age > 65 years Peer advisor group n=46 Advanced practice nurse group n=43 Control group n=43	Telephone: 1 per week for 12 weeks. Duration: N/R	Baseline, T1 (at 12 weeks)	Quality of life (improved, not significant) and self-efficacy (no effect)	Moderate
9.	Cossette et al. (2012) Canada	Two groups RCT post- acute cardiac syndrome M and F not age restricted, mean age 59.4 years Intervention group n=121 Control group n= 121	Face to face and telephone: 1 face to face pre-discharge, a telephone call at 3 days post-discharge and a face to face or a telephone call at 10 days post-discharge. Duration: average time for the 3 sessions: 37.3, 31.4 and 54.3 minutes	Baseline, T1 (at pre-discharge), T2 (6 weeks)	Anxiety (no effect), body weight (no effect), perceived control (improved p=0.0241) and physical activity (no effect)	Moderate
10.	Dalal et al. (2007) UK	Two group RCT plus two group preference arm post- myocardial infarction M and F mean age 62.75 years not age restricted Randomisation arm n=104 randomly allocated to home n=60, preferred home n=72; randomly allocated to hospital n=44 preferred hospital n=54	Face to face and telephone: face to face, 1 at hospital and 1 at home a week after discharge, Telephone, 4 times in 6 weeks. Duration of telephone: 5-10 minutes	Baseline, T1 (3 months), T2 (9 months)	Body weight (no effect), BP (no effect), cholesterol level (improved in both groups), physical activity (improved in both groups), quality of life and anxiety (improved in both groups) and smoking cessation (no effect)	Strong
11.	Davidson et al. (2005) UK	Two groups RCT post- stroke M and F not age restricted Intervention group n=21 mean age 68.9 years; Control group n=20 mean age 63.55 years	Face to face: 2 days per week for 5 weeks. Duration: mean time=12.73 minutes	Baseline, T1 (5 weeks)	Quality of life (decline, not significant)	Moderate

No.	Author, year and country	Study design and sample	Intervention, frequency and duration	Measurements	Outcomes	Quality of study
12.	Dougherty et al. (2004) USA	Two groups RCT post-Implantable Cardioverter Defibrillator (ICD) or sudden cardiac arrest M and F not age restricted Intervention group (booklet + telephone) n=84 mean age 63.02 years Control group n= 84 mean age 65.06 years	Telephone: a structured weekly education for 8 weeks. Duration: 15-20 minutes	Baseline, T1 (1 month), T2 (3 months)	Anxiety (improved not significant), disease knowledge (improved $p<0.02$), healthcare utilisation (no effects) and quality of life (improved not significant)	Moderate
13.	Ellis et al. (2005) UK	Two groups RCT post-stroke or transient ischemic attack M and F not age restricted Intervention group n=100 mean age 64.3 years Control group n=105 mean age 65 years	Face to face: monthly for 3 months. Duration: approximately 30 minutes.	Baseline, T1 (5 month)	BP (improved not significant) and satisfaction (improved $p<0.05$)	Moderate
14.	Gallagher et al. (2003) Australia	Two groups RCT post-myocardial infarction, coronary artery bypass surgery, coronary angioplasty or stable angina, only F not age restricted Intervention group n=93, age 67±10 years Control group n= 103, age 67±12 years	Face to face and telephone: face to face, 1 session 1 to 2 days before hospital discharge; 60 minutes; telephone, 4 calls post-discharge over 6 weeks; 30 minutes.	Baseline, T1 (12weeks)	Anxiety and depression (improved $p=0.001$) and psychosocial adjustment (improved $p=0.001$)	Moderate

No.	Author, year and country	Study design and sample	Intervention, frequency and duration	Measurements	Outcomes	Quality of study
15.	Goodman et al. (2008) UK	Two groups RCT pre-cardiac bypass surgery M and F not restricted age Intervention group (counselling and manual guideline) n=94 mean age 63.7 years Control group n=94 mean age 65.9 years	Face to face: monthly counselling at home for 3months. Duration: N/R	Baseline, T1 (3months after discharge)	Anxiety (improved not significant), BP (improved p<0.001), cholesterol level (improved p=0.001), healthcare utilisation (improved p=0.01) and quality of life (improved p=0.04)	Moderate
16.	Hajek et al. (2002) UK	Two groups RCT post-myocardial infarction or before coronary artery bypass surgery M and F age<76 years, Intervention group n=274 control group n=266	Face to face: one session. Duration: 20-30 minutes	Baseline, T1 (6 weeks), T2 (12 months)	Smoking cessation (improved in both groups)	Strong
17.	Han et al. (2010) USA	Two groups RCT post-hypertension M and F mean age 52 years (40-64) not age restricted Intervention 1 (more intensive counselling) n= 182; Intervention 2 (less intensive counselling) n= 178	Face to face, telephone and remote: education in class or email for 6 weeks; telephone, at 3 month bi-weekly or monthly over 12-month. Duration: N/R	Baseline, T1 (15 months)	Disease knowledge (improved in intervention 1 p=0.041) and healthcare utilisation (no effect)	Moderate
18.	Harrison et al. (2002) Canada	Two groups RCT post-coronary heart failure M and F 33-93 years Intervention (transitional care) group n= 92 Control group n=100	Face and telephone. Face to face, 1 at discharge. Telephone 1 within 24 hours of discharge. Duration: N/R	Baseline, T1 (two weeks), T2 (six weeks), T3 (12 weeks)	Quality of life (improved p<0.05)	Moderate

No.	Author, year and country	Study design and sample	Intervention, frequency and duration	Measurements	Outcomes	Quality of study
19.	Hartford et al. (2002) Canada	Two groups RCT pre and post-coronary artery bypass surgery M and F mean age 62.7 years not age restricted Intervention group n= 63 Control group n= 68	Face to face and telephone: face to face, education on the day of discharge; telephone, 6 telephone calls over 7 weeks. Duration of telephone: 20-60 minutes	Baseline, T1 (2 weeks), T2 (4 weeks), T3 (8 weeks)	Anxiety (improved p<0.041)	Moderate
20.	Holst et al. (2007) Sweden	One group RCT post-heart failure M and F mean age 79 years not age restricted Intervention (education and CD-ROM) n=60	Face to face and remote intervention: 1 intensive session at home and multimedia programme on CD-ROM. Duration: N/R	Baseline, T1 (3months), T2 (12 months)	Quality of life (improved not significant) and self-care management behaviour (no effect)	Moderate
21.	Jaarsma et al. (2000) Netherlands	Two groups RCT post-heart failure M and F age > 50 years Intervention group n=58 Control group n= 74	Face to face and telephone: face to face, 4 at hospital and 1 at home; telephone: 1 call. Duration: N/R	Baseline, T1 (1 month), T2 (3 months), T3 (9 months)	Disease symptoms (improved p=0.02), psychosocial adjustment (improved p=0.03), quality of life (improved p=0.04) and self-care management behaviour (improved p<0.001)	Moderate
22.	Jerant et al. (2001) USA	Three groups RCT post-coronary heart failure M and F age > 40 years Telephone group n=12 Video-based group n=13 Control group n= 12	Telephone and remote: phone calls and scheduled video calls over 2 months. Duration: N/R	Baseline, T1 (2 months)	Healthcare utilisation (improved in both interventions p<0.05)	Weak

No.	Author, year and country	Study design and sample	Intervention, frequency and duration	Measurements	Outcomes	Quality of study
23.	Jiang et al. (2007) China	Two groups RCT post-myocardial infarction or angina pectoris M and F not age restricted Intervention group (hospital-based and home-based) n=83 mean age 61.37 years Control group n=84 mean age 62.11years	Face to face and telephone calls. Seven sessions of face to face at the hospital, then face to face sessions and telephone calls follow-up over 12 weeks. Frequency and duration: N/R	Baseline, T1 (3 months), T2 (6 months)	Adherence (improved $p<0.05$), body weight (improved $p<0.05$), BP (improved $p<0.05$), physical activity (improved $p<0.05$) and smoking cessation (N/R)	Strong
24.	Karlsson et al. (2005) Sweden	Two groups RCT post- heart disease, hypertension or diabetes mellitus M and F age> 60 years Intervention group n=103 Control group n= 105	Face to face. Frequency and duration: N/R	Baseline, T1 (6 months)	Disease knowledge (improved $p<0.01$) and quality of life (no effect)	Moderate
25.	Kommuri et al. (2012) USA	Two groups RCT post- heart failure M and F mean age 67 years not age restricted Intervention group n=128 Control group n= 137	Face to face: 1 counselling. Duration: 1 hour	Baseline, T1 (3 months)	Disease knowledge (improved $p<0.001$)	Moderate
26.	Little et al. (2004) UK	Eight groups RCT adults with high risk of coronary heart disease M and F mean age 59.0 years not age restricted GP group n=72 or no GP group n=79 Nurse group n=73 or no nurse group n= 78 Booklet group n=75 or no booklet group n=76	Face to face: 1 counselling. Duration: N/R	Baseline, T1 (1 month)	BP (no effect), cholesterol level (improved not significant), depression (improved not significant) and physical activity (improved $p<0.001$)	Moderate

No.	Author, year and country	Study design and sample	Intervention, frequency and duration	Measurements	Outcomes	Quality of study
27.	Mayou et al. (2002) UK	Two groups RCT post-myocardial infarction M and F age ≤ 70 years Intervention group n=56 Control group n=58	Face to face and telephone: face to face, 2-4 times over 12 months for 133 minutes; telephone: 1 call.	Baseline, T1 (1 month), T2 (3months), T3 (12 months)	Anxiety and depression (improved p<0.002) and quality of life (improved p<0.004)	Moderate
28.	McHugh et al. (2001) UK	Two groups RCT pre-coronary artery bypass surgery M and F not age restricted Intervention group n=49, age 35-77 years Control group n=49, age 42-76 years	Face to face: monthly session up to 8 months; according to patients' needs. Duration: N/R	Baseline, T1 (before the CABG surgery)	Anxiety and satisfaction (improved, not significant), body weight (improved p<0.01), BP (improved p=0.001), cholesterol level (improved p=0.003), depression (improved p<0.001), physical activity (improved p<0.001), quality of life (improved p<0.001) and smoking cessation (improved p=0.001)	Strong
29.	McKinley et al. (2009) USA and Australia	Two groups RCT post- coronary heart disease M and F mean age 67 years not age restricted Intervention group n=1777 Control group n= 1745	Face to face and telephone: face to face, 1 time for 40 minutes; telephone, 1 call for 10-15 minutes	Baseline, T1 (3 months), T2 (12 months)	Disease knowledge (improved p<0.0005) and perceived control (improved p<0.0005)	Strong
30.	Meng et al. (2007) USA	Two groups RCT post- cardiac disease M and F mean age 77 year not age restricted Intervention group n= 138 Control group n= 143	Face to face and telephone: monthly meetings. Duration: N/R.	Baseline, T1 (2 years)	Healthcare utilisation (improved, not significant) and quality of life (improved p=0.055)	Moderate

No.	Author, year and country	Study design and sample	Intervention, frequency and duration	Measurements	Outcomes	Quality of study
31.	Mittag et al. (2006) Germany	Two groups RCT post-cardiac event M and F not age restricted Intervention group n=171 mean age 58.8 years Control group n=172 mean age 60.92 years	Telephone: monthly call for 12 months. Duration: 2-92 minutes (average call 24 minutes)	Baseline, T1 (12 months)	Anxiety and depression (improved p=0.046), BP (no effect), cholesterol level (no effect), physical activity (improved in both groups) and smoking cessation (improved in both groups)	Moderate
32.	Moher et al. (2001) UK	Three groups RCT post-coronary heart disease, M and F 55-75 years Audit group n=559 GP recall group n=682 Nurse recall group n=665	Face to face and remote: ongoing support at a practice setting with recall system. Duration: N/R	Baseline, T1 (18 months)	BP (improved not significant), cholesterol (decline not significant), quality of life (no effect) and smoking cessation (no effect)	Moderate
33.	Moore et al. (2006) USA	Two groups RCT post-cardiac event M and F mean age 62 years (38-86 years) Intervention group n=119 Control group n=131	Face to face: 1 per week for 3 weeks, 2 sessions in 2 months. Duration: 90 minutes	Baseline, T1 (1 month), T2 (12 months)	Physical activity (improved p=0.02) and self-efficacy (improved not significant)	Strong
34.	Moser et al. (2012) Australia, USA and New Zealand	Two groups RCT post-coronary heart disease M and F not age restricted Intervention group n=1330 age 68±11 years Control group n= 1267 age 68±10 years	Face to face: 1 time for 45 minutes.	Baseline, T1 (3months), T2 (12 months)	Anxiety (improved p<0.01) and perceived control (improved p<0.01)	Moderate

No.	Author, year and country	Study design and sample	Intervention, frequency and duration	Measurements	Outcomes	Quality of study
35.	Murchie et al. (2004) UK	Two groups RCT post-coronary heart disease M and F age < 80 years Intervention group n=673 Control group n=670	Face to face: according to clinical circumstances (2-6 months). Duration: N/R	Baseline, T1 (1 year), T2 (4 years)	Anxiety and depression (no effect) and quality of life (improved p<0.05)	Moderate
36.	Paez and Allen (2006) USA	Two groups RCT post-coronary heart disease and hypercholesterolemia M and F mean age 60±9 years not age restricted Intervention group n=115 Control group n=113	Face to face and telephone: receiving case management for one year and 1 visit between 4-6 weeks for 12 months. Duration: N/R	Baseline, T1(6 months) T2 (12 months)	Cholesterol level (improved p=0.001) and healthcare utilisation (improved; not significant)	Weak
37.	Quist-Paulsen and Gallefoss (2003) Norway	Two groups RCT post-myocardial infarction, unstable angina or coronary artery bypass surgery M and F age<70 years Intervention group n=118 Control group n= 122	Face to face and telephone: face to face, 1-2 at hospital; telephone, 5 times (at 2nd day, 2st week, 3rd week, 3rd month and 5 month). Duration of face to face and telephone: 147 minutes	Baseline, T1 (6 weeks), T2 (12 months)	Smoking cessation (improved p=0.004)	Moderate
38.	Reid et al. (2003) Canada	Two groups RCT post-coronary angiography, myocardial infarction or coronary artery bypass surgery M and F not age restricted Intervention 1 (minimal care and guideline book) n=128 mean age 54.2 years Intervention 2 (stepped intervention) n=126 mean age 53.5 years	Face to face: three counselling sessions over 8 weeks and nicotine patch therapy for 8 weeks. Duration: 20 minutes	Baseline, T1 (3 months), T2 (12 months)	Self-efficacy (improved, not significant) and smoking cessation (improved, p<0.05)	Moderate

No.	Author, year and country	Study design and sample	Intervention, frequency and duration	Measurements	Outcomes	Quality of study
39.	Rudd et al. (2004) USA	Two groups RCT post-hypertension M and F not age restricted Intervention group n= 74 mean age 59 years Control group n= 76 mean age 60 years	Telephone: 4 times over 4 months. Duration: average call last for 10 minutes	Baseline, T1 (3months), T2 (6months)	BP (improved p<0.01) and medication adherence (improved p<0.03)	Moderate
40.	Smith and Burgess (2009) Canada	Two groups RCT post-myocardial infarction or coronary artery bypass surgery M and F mean age 54 years not age restricted Minimal intervention (brief education in hospital) n=139 Intensive intervention (minimal intervention and counselling at home) n=137	Face to face and telephone: face to face, 1 time at bedside for 45-60 minutes; telephone: 7 calls/ 2 months for 5-10 minutes.	Baseline, T1 (3 months), T2 (6 months), T3 (12 months)	Smoking cessation (improved p=0.003)	Strong
41.	Smith et al. (2005) USA	Three groups RCT post-heart failure M and F mean age 70.9±9.9 years not age restricted Disease management n=356 Augment disease management n=345 Control group n=359	Telephone: telephone calls. Duration: N/R	Baseline, T1 (6 months), T2 (12 months), T3 (18 months)	Quality of life (improved p=0.004)	Moderate
42.	Sol et al. (2008) Netherlands	Two groups RCT adults with high risk of CVD M and F age< 80 years Intervention group n=95 Control group n=80	Face to face or telephone: 5 visits or telephones. Duration: N/R	Baseline, T1 (6months), T2 (12 months)	Self-efficacy (improved p<0.05)	Moderate

No.	Author, year and country	Study design and sample	Intervention, frequency and duration	Measurements	Outcomes	Quality of study
43.	Stromberg et al. (2003) Sweden	Two groups RCT post-heart failure or coronary heart failure M and F not age restricted Intervention group n=52 mean age 77 years Control group n=54 mean age 78 years	Face and telephone: face to face, 1 visit in 2-3 weeks post-discharge; telephone, contact any time during the follow-up 12-month. Duration of each face to face or telephone call: 60 minutes	Baseline, T1 (3 months), T2 (12 months)	Healthcare utilisation (improved p=0.045) and self-care management behaviour (improved p=0.01)	Moderate
44.	Stromberg et al. (2006) Sweden	Two groups RCT post- heart failure M and F Mean age 70 years (32-91) Intervention group n=82 Control group=72	Face to face and remote: face to face one time for 60 minutes; remote, interactive multimedia programme (30-45 minutes to run the programme)	Baseline, T1 (1 month), T2 (6 months)	Disease knowledge (improved p=0.03), disease symptoms (improved p=0.001), quality of life (improved p=0.001) and self-care management behaviour (improved p=0.01)	Strong
45.	Tiessen et al. (2012) Netherlands	Two groups RCT adults high risk of CVD M and F 50-75 years Intervention group n=89 mean age 65 years Control group n= 90 mean age 65 years	Face to face: follow-up 3 times at monthly intervals and after that at 3-month intervals for 12 months. Duration: first session 20 minutes, then according to patient preferences	Baseline, T1 (12 months)	Body weight (improved in both groups), BP (improved in both groups), cholesterol level (improved in both groups), physical activity (improved in both groups) and smoking cessation (improved in both groups)	Moderate

No.	Author, year and country	Study design and sample	Intervention, frequency and duration	Measurements	Outcomes	Quality of study
46.	Tonstad et al. (2007) Norway	Two groups RCT post-hypertension M and F age 30-69 years Intervention group n=31 Control group n= 20	Face to face: monthly meeting for 6 months. Duration: first session 60 minutes, then 30 minutes	Baseline, T1 (6 months)	Body weight (improved p=0.001) and cholesterol level (improved p=0.03)	Moderate
47.	Torres-Arreola et al. (2009) Mexico	Two groups RCT post- ischemic stroke M and F age> 40 years mean age 70 years Intervention 1 (education and physiotherapy) n= 59 Intervention 2 (education alone) n=51	Face to face: education and physiotherapy, daily/2weeks, then twice/ 2weeks, then weekly/4months for 90 minutes. Education alone, at hospital then weekly/ month for 45 minutes	Baseline, T1 (1 month), T2 (3 months), T3 (6 months)	Quality of life (improved p<0.05)	Moderate
48	Tranmer and Parry (2004) Canada	Two groups RCT post-cardiac surgery M and F not age restricted Intervention group n=102 mean age 63.8 year (38.7 to 87.1) Control group n=98 mean age 66.61 years(41.9 to 82.6)	Telephone: 2 times/4days, then weekly for 4 Weeks. Duration: 20-30 minutes	Baseline, T1 (5 weeks)	Healthcare utilisation (no effect), quality of life (improved not significant) and satisfaction (improved p=0.03)	Moderate
49.	Tseng et al. (2007) Taiwan	Three groups RCT stroke with hemiplegia M and F, mean age 75.05 years (55-88 years) Intervention (1) n= 21 Intervention (2) n=21 Control group n=17	Face to face: 5 times/joint, twice/day, 6 days/week for 4 weeks. Duration: 10-20 minutes	Baseline, T1 (4 weeks)	Depression (improved, p<0.05), disease symptoms (improved not significant) and physical activity (improved p<0.001),	Moderate

No.	Author, year and country	Study design and sample	Intervention, frequency and duration	Measurements	Outcomes	Quality of study
50.	Woodend et al. (2008) USA	Two groups RCT post-heart failure and angina M and F mean age 66 years not age restricted Intervention group (video conferencing) n=124 Control group n=125	Remote intervention. Structure video conferencing at least weekly over 3 months, more frequent was in first few weeks. Duration: N/R	Baseline, T1 (1 month), T2 (3 months), T3 (12 months)	disease symptoms (improved $p<0.05$), healthcare utilisation (improved $p=0.04$) and quality of life (improved $p=0.001$)	Moderate
51.	Yehle et al. (2009) USA	Two groups RCT post-heart failure M and F mean age 67.3 years not age restricted Intervention (education by nurse and primary investigator plus support group) group n=13 Control group n=10	Face to face; 1 time. Duration: 60 minutes	Baseline, T1 (8 weeks)	Disease knowledge (improved $p=0.038$) and self-care management behaviour (declined not significantly)	Weak
52.	Zhao and Yuet Wong (2009) China	Two groups RCT post-angina or myocardial infarction M and F age $\geq$ 60 years mean age 72 years Intervention group n=107 Control group n=113	Face to face and telephone. Face to face: 2 times/ 1 month, Telephone: 2 times/ 1 month. Duration: N/R	Baseline, T1 (4 weeks), T2 (12weeks	Adherence to diet and medications (improved $p<0.05$), disease knowledge (improved $p<0.05$) and satisfaction (improved $p=0.001$)	Strong

3.3.1.3 Strength of the nurse-led interventions

There was variety in the frequency, duration and interactivity of the nurse-led interventions employed in the included studies. The 52 studies were, therefore, assessed for the frequency, duration and interactivity to classify the overall strength of the interventions. This method of classifying the nurse-led intervention has been previously adopted to assess the strength of nurse-led telephone interventions (Wu et al., 2010). The frequency of the intervention was ranked as high (≥once/week); moderate (<once weekly but> once monthly); or low (≤once monthly). The duration of the intervention was ranked as long (≥30 minutes); moderate (>5 minutes but<30 minutes); or short (≤5 minutes). Some studies did not report the duration of the intervention. It was, therefore, assumed that the duration was five minutes since it is unlikely that any intervention lasts less than five minutes. The interactivity of the nurse intervention was classified into high interactivity or low interactivity according to the extent to which patient cues were sought and responded to.

Eighteen studies were classified as high strength interventions, for example, Dougherty et al.'s (2004) study reported weekly telephone calls for 8 weeks with each call lasting for 15-20 minutes. This study was classified a high strength intervention because it included high frequency with high interactivity and total intervention duration of 120-160 minutes. Twenty-three studies were classified as moderate strength interventions, for example, Carrol and Rankin (2006) employed a telephone call intervention weekly for 12 weeks (each call lasted for 5 minutes), resulting in a total of 60 minutes. This study was classified a moderate strength intervention as it included high frequency with low interactivity and was of short duration. Eleven studies were classified as low strength interventions, for example, Little et al. (2004) employed only one counselling session without any follow-up.

3.3.1.4 Clinical outcomes

Fourteen studies reported clinical data with objectively measured outcomes including BP (n=9), cholesterol level (n=10), physical activity (n=5), smoking cessation (n=5) and body weight (n=7). Sixteen studies reported clinical data measured using self-report questionnaires.

A. Objective outcomes

- **Body weight**

Five studies (i.e. Allison et al., 2000; McHugh et al., 2001; Anderson et al., 2006; Jiang et al., 2007; Tonstad et al., 2007) measured body weight and reported a statistically significant reduction in body weight and waist circumference over a six to eight month period. Nevertheless, one study (Tiessen et al., 2012) found an improvement with no statistical significance. One study (Dalal et al., 2007) found no effects on the body weight following the nurse-led intervention. Two studies by Anderson et al. (2006) and Jiang et al. (2007) included strong nurse-led interventions.

Tonstad et al.'s (2007) study measured weight management by waist circumference according to guidelines of the National Cholesterol Education Programme (Pheley et al., 1995). Jiang et al.'s (2007) study measured body weight by cardiac physiological risk parameters balance scale. Three studies (McHugh et al., 2001; Dalal et al., 2007; Tiessen et al., 2012) used the body mass index as a measurement (Kg/m2). Two studies (Allison et al., 2000; Anderson et al., 2006) assessed waist-to-hip.

- **Blood pressure**

Nine studies reported positive outcomes in the management of hypertension and one study (Dalal et al., 2007) reported no effect on BP following the intervention. Four studies (McHugh et al., 2001; Rudd et al., 2004; Artinian et al., 2007; Goodman et al., 2008) reported a statistically significant reduction in the BP with a follow-up time from 5 months to 12 months; one of them (Artinian et al., 2007) included strong nurse-led interventions. Four studies (i.e. Moher et al., 2001; Ellis et al., 2005; Bosworth et al., 2009; Tiessen et al., 2012) reported an improvement in BP with no statistical significance. The Bosworth et al.'s (2009) sample was 98% male. One study (Little et al., 2004) reported no change in BP which may have been due to the short period of follow-up (one month) as well as a reported confounder in one group, namely, the higher reported intention to undertake exercise.

Six studies (i.e. Little et al., 2004; Rudd et al., 2004; Artinian et al., 2007; Goodman et al., 2008; Bosworth et al., 2009; Tiessen et al., 2012) used an electronic BP monitor to measure BP, while one study (McHugh et al., 2001) used a manual technique called Korotkoff sounds (The British Hypertension Society Guideline). One study (Ellis et al., 2005) measured the BP using the contemporary national and local treatment guideline (<140/85 mmHg) and two studies (Moher et al., 2001; Dalal et al., 2007) did not report how they measured BP.

- **Cholesterol level**

Ten studies measured the cholesterol level, eight of which reported a reduction in the cholesterol level. One study (Moher et al., 2001) revealed an increase in the cholesterol level with no statistical significance and one study (Mittag et al., 2006) found no effect

following the intervention on the cholesterol level. Of the eight studies which reported an improvement, the findings of five studies (i.e. Allison et al., 2000; McHugh et al., 2001; Peaz and Allen, 2006; Tonstad et al., 2007; Goodman et al., 2008) were statistically significant while three (Little et al., 2004; Dalal et al., 2007; Tiessen et al., 2012) did not have statistically significant findings. One study (Dalal et al., 2007) implemented a strong nurse-led intervention.

Seven of the ten studies (e.g. McHugh et al., 2001; Paez and Allen, 2006; Tonstad et al., 2007; Goodman et al., 2008) reported the details of measurements. These include: automated analyser equipment (Hitachi 911; Hitachi Limited, Tokyo, Japan); lipid research clinic programmes (Bachorik et al., 1991; Bachorik and Ross, 1995); the use of hospital laboratories (Goodman et al., 2008); standardised protocol use and internationally agreed quality assurance procedures (The Institute of Biochemistry, Glasgow Royal Infirmary NHS Trust); finger stick and analysed on a cholesterol L.D.X potable analyser (Cholestech Corp, Hayward, California) (Cobbaert et al., 1994); the National Cholesterol Education Programme (Pheley et al., 1995); and one study (Moher et al., 2001) used a hospital record to obtain the study data.

- **Physical activity**

Five studies reported positive benefits of nurse-led interventions on physical activity. Three studies (i.e. Allison et al., 2000; Little et al., 2004; Moore et al., 2006) reported a statistically significant increase in the physical activity with a follow-up time from 9 to 12 months and one study (Dalal et al., 2007) reported an increase in the physical activity with no statistical significance. One study (Tseng et al., 2007) reported a statistically significant increase in physical activity at one-month follow-up. Two studies (i.e. Moore et al., 2006; and Dalal et al., 2007) implemented a strong nurse-led intervention.

Different scales were used to measure exercise performance and physical activity levels. One study *(*Little et al., 2004) used validated tests including the Canadian Home Step Test (Shephard et al., 1976) for the measurement of exercise, and the 6-minute walking test (Butland et al., 1982; Kline et al., 1987) for the measurement of aerobic fitness. Another study *(*Moore et al., 2006) used portable wristwatch HR monitors (Polar Vontage NVtm, Plar Electro, Kempele, Finland) and a monthly activity diary to measure exercise performance; 6-minute walking test (Guyatt et al., 1984) to measure aerobic fitness. Two studies (Allison et al., 2000; Dalal et al., 2007) used validated tools for exercise performance called Treadmill Testing (Bruce, 1971). One study (Tseng et al., 2007) measured physical activity by using FIMtm Subscale (Keith et al., 1987).

- **Smoking cessation**

Five studies (i.e. Allison et al., 2000; Hajek et al., 2002; Quist-Paulsen and Gallefoss, 2003; Mittag et al., 2006; Smith and Burgess, 2009) reported a decrease in smoking rate after a 12-month follow-up period. Of these, two (Quist-Paulsen and Gallefoss, 2003; Smith and Burgess, 2009) reported statistically significant findings while the other studies (Allison et al., 2000; Hajek et al., 2002; and Mittag et al., 2006) reported an improvement in both intervention and control groups. Smith and Burgess, (2009) used a strong nurse-led intervention.

Quist-Paulsen and Gallefoss (2003) measured smoking rate by nicotine concentration in the urine. For instance, an adult is considered a non-smoker if he/she has a nicotine metabolite concentration in urine of less than 2.0 mmol/mol creatinine. Two studies (Allison et al., 2000; Hajek et al., 2002) measured the smoking rate using a carbon monoxide reading and the salivary cotinine concentration level. Smith and Burgess

(2009) used a proxy confirmation (Hyland et al., 1997) to measure smoking levels. Mittag et al. (2006) did not report the measurement procedure.

B. Self-report measurements

Sixteen studies measured clinical outcomes using self-report questionnaires including physical activity (n=6), smoking rate (n=8), body weight (n=1) and disease symptoms (n=4). Six studies measured physical activity using self-report questionnaires. Four studies (i.e. McHugh et al., 2001; Anderson et al., 2006; Mittag et al., 2006; Jiang et al., 2007) found a statistically significant improvement in physical activity; two studies (Mittag et al., 2006; Tiessen et al., 2012) reported improvements with no statistical significance; and one study (Cossette et al., 2012) found no effects. Of these studies, one (Anderson et al., 2006) implemented a strong nurse-led intervention. Physical activity was measured using different self-report questionnaires, including the Jenkins Activity Checklist for Walking (Jenkins, 1989); the Woods and Mitchell questionnaire (Seattle Mid-life study, University of Washington); minutes of physical activity per-day; Health-enhanced Physical Activity, SQUASH (Wendel-Vos et al., 2003); Do You Have a Healthy Heart (Acti-Menu, 2003); and hours of physical activity per-week.

Varied findings were reported regarding the smoking rate. Three studies (McHugh et al., 2001; Reid et al., 2003; Anderson et al., 2006) found a statistically significant reduction in the smoking rate following a nurse-led intervention. McHugh et al. (2001) and Anderson et al. (2006), however, used a strong nurse-led intervention. Notably, Anderson et al. (2006) included only females in the study. Additionally, one study (Tiessen et al., 2012) reported a decrease in smoking rate with no statistical significance. Other studies (Moher et al., 2001; Dalal et al., 2007; Jiang et al., 2007) reported no effects in the smoking rate following a nurse-led intervention, even though

one study (Dalal et al., 2007) implemented a strong nurse-led intervention. Various self-report questionnaires were used for data collection. Two studies did not report measurement tools (Dalal et al., 2007; Tiessen et al., 2012). One study measured the history of smoking using a record of smoking habits (Moher et al., 2001). Another study (Jiang et al., 2007) used a validated questionnaire developed by Allen (1996) and DeBusk et al. (1994). Another one (Anderson et al., 2006) used two general questions about smoking rate. One study (Reid et al., 2003) used the Fagerstrom Tolerance questionnaire (Fagerstrom et al., 1989). McHugh et al.'s (2001) study measured the smoking rate by asking about the number of cigarettes smoked per day.

One study (Cossette et al., 2012) measured the body weight and found an improvement in both the nurse-led intervention and control groups with no statistical significance. This study used the Are You Eating? Scale (Acti-Menu, 2003). Four studies assessed disease symptoms following the nurse-led intervention. Three studies (Jaarsma et al., 2000; Stromberg et al., 2006; Woodend et al., 2008) reported a statistically significant improvement in overall disease symptoms (e.g. pain and shortness of breath) after a period of 6 to 12 months. One study (Tseng et al., 2007) revealed an improvement in pain scores which was not, however, statistically significant. Notably, Stromberg et al. (2006) employed strong nurse-led interventions. Self-report measurements used included a short questionnaire developed by Jaarsma et al.'s (2000) study. Another study (Woodend et al., 2008) used both the Minnesota Living with Heart Failure questionnaire (Rector et al., 1987) and the Seattle Angina questionnaire (Spertus et al., 1994). One study (Stromberg et al., 2006) utilised the EuroQol questionnaire to measure health-related quality of life (EuroQol Group, 1990; Brooks, 1996). One study (Tseng et al., 2007) measured pain by a physiotherapist assessment

3.3.1.5 Care outcomes

Twenty-eight studies measured care outcomes which included: disease knowledge (n=9); self-efficacy and perceived control (n=7); adherence (n=5); healthcare utilisation (n=7); self-care management (n=6); and satisfaction with the nurse-led intervention (n=5).

- **Disease knowledge**

Nine studies measured the level of disease knowledge and revealed an increase in the knowledge over a period of 3-12 months. The nine studies (i.e. Dougherty et al., 2004; Bosworth et al., 2005; Karlsson et al., 2005: Kommuri et al., 2005; Stromberg et al., 2006; McKinley et al., 2009; Yehle et al., 2009; Zhao and Yuet Wong, 2009; Han et al., 2010) reported statistically significant findings with three studies (Stromberg et al., 2006; McKinley et al., 2009; Zhao and Yuet Wong, 2009) having a strong nurse-led intervention. Notably, the sample in Bosworth et al.'s (2005) study was 98% male. One study (Yehle et al., 2009) had methodological weaknesses, namely, small sample size, insufficient details on the RCT design and reported confounders.

Two studies (i.e. Yehle et al., 2009; McKinley et al., 2009) used validated self-report questionnaires including the Heart Failure Knowledge Test (Artinian et al., 2002); and an instrument from REACT study (Luepker et al., 2000). Six studies (i.e. Dougherty et al., 2004; Bosworth et al., 2005; Karlsson et al., 2005; Kommuri et al., 2005; Stromberg et al., 2006; Zhao; Yuet Wong, 2009) used questionnaires designed specifically for the studies. One study did (Han et al., 2010) not report the measurement used.

- **Self-efficacy and perceived control**

Four studies measured self-efficacy and three studies measured perceived control using self-report measurements. Of the four studies which measured self-efficacy, one study (Sol et al., 2008) reported a statistically significant improvement in self-efficacy after a 12-month follow-up and two studies (Reid et al., 2003; Moore et al., 2006) reported an improvement after a 12-month follow-up (not significant). One study (Moore et al., 2006) included a strong nurse-led intervention. However, one study (Carrol and Ranking, 2006) reported no effect following the intervention. The three studies (McKinley et al., 2009: Cossette et al., 2012; Moser et al., 2012) which measured perceived control reported a statistically significant increase in the level of perceived control after a period of 12 months. McKinley et al. (2009) included a strong nurse-led intervention.

A number of different scales were used to measure self-efficacy which included the Jenkins Self-Efficacy Scale (Jenkins, 1989) and the Duke Activity Status Index Self-Efficacy Scale (DASI-SE) (Hlatky et al., 1989); adapted Diabetes Mellitus Type 2 Self-Efficacy Scale (Bijl et al., 1999; Sol et al., 2006); a questionnaire developed by Velicer et al. (1993); and the Exercise Barriers and Adherence Self-Efficacy Scale (McAuley, 1993). Perceived control was measured by the Control Attitudes Scale-Revised developed by Moser et al. (2009); the Revised Illness Perception Questionnaire (Moss-Morris et al., 2002); the Control Attitudes Scale Revised (Moser and Dracup, 1995).

- **Adherence levels**

Five studies reported an increase in the level of adherence to medication and physical activity in the intervention group over six months of follow-up. Four studies (Rudd et

al., 2004; Bosworth et al., 2005; Jiang et al., 2007; Zhao and Yuet Wong, 2009) had statistically significant findings, while Anderson et al.'s (2006) study reported no significant findings. Two studies (Rudd et al., 2004; Jiang et al., 2007) implemented strong nurse-led interventions.

One study (Zhao and Yuet Wong, 2009) used a validated self-report questionnaire to measure adherence levels to diet, medications, exercise and health-related lifestyle. Rudd et al. (2004) measured drug adherence using the electronic drug event monitor to assess daily adherence. Anderson et al. (2006) measured the adherence to the physical activity of the intervention using a self-report questionnaire. Jiang et al.'s (2007) study measured the adherence to diet by using a Computer Dietary Analysis and Dietary Guide Service System (Huang et al., 1999) and medication adherence using the self-reported drug compliance scale (Tsang, 2001). Bosworth et al. (2005) used Morisky Self-report Medication-Taking Scale.

- **Healthcare utilisation**

Seven studies measured healthcare utilisation using the number of admissions and hospital costs. Of the seven studies, two (Dougherty et al., 2004; Tranmer and Parry, 2004) found no effects following the nurse-led intervention but they used strong nursing interventions. Of the other five studies, four reported a statistically significant reduction in hospital charges (Jerant et al., 2001), cardiac health utilisation (Goodman et al., 2008) and number of admissions days (Woodend et al., 2008; Stromberg et al., 2003) at 2 months, 5 months and 12 months, respectively, following the nurse-led intervention. One study (Meng et al., 2007) reported a reduction in hospital charges with no significant difference.

- **Self-care management behaviour**

Six studies measured self-care management. Three studies (i.e. Jaarsma et al., 2000; Stromberg et al., 2003; Stromberg et al., 2006) found a statistically significant increase in the self-care management behaviours after nine months of follow-up. Two studies (Holst et al., 2007; Brennan et al., 2010) reported no effect following the nurse-led intervention. One study (Yehle et al., 2009) reported an improvement only in the control group. This study had methodological weaknesses including a small sample size, reported confounders and short time follow-up (8 weeks). Stromberg et al. (2006) implemented a strong nurse-led intervention.

Two studies (i.e. Jaarsma et al., 2000; Stromberg et al., 2006) used a validated measurement tool designed for the study. Holst et al.'s (2007) study used the European Heart Failure Self-Care Behaviour Scale EHFScBS (Jaarsma et al., 2003), another two studies (Yehle et al., 2009; Brennan et al., 2010) used the Self-Care Heart Failure Index (SCHFI) (Riegel et al., 2004), and another study (Stromberg et al., 2003) used the Heart Failure Self-Care Behaviour Scale (Jaarsma et al., 1999).

- **Satisfaction with the nurse-led interventions**

Five studies measured participants' satisfaction with the nurse-led intervention. Four studies (McHugh et al., 2001; Tranmer and Parry, 2004; Ellis et al., 2005; Zhao and Yuet Wong, 2009) reported satisfaction with the nursing services after a period of eight months with three studies (Tranmer and Parry, 2004; Ellis et al., 2005; Zhao and Yuet Wong, 2009) reporting statistically significant findings. Of which, one study (Zhao and Yuet Wong, 2009) implemented a strong nurse-led intervention. One study (Brennan et al., 2010) found no effect following the nurse-led intervention at six months. Validated

tools were used for the assessment of satisfaction including a stroke services questionnaire (Pound et al., 1994). Brennan et al.'s (2010) study used an Organisation Specific Survey administered by a home care nursing agency. Another three studies used validated tools designed for their studies (McHugh et al., 2001; Tranmer and Parry, 2004; Zhao and Yuet Wong, 2009).

3.3.1.6 Psychosocial outcomes

Thirty seven studies measured psychosocial outcomes including quality of life (n=21), depression and anxiety (n=14) and psychosocial adjustments (n=2).

- **Quality of life**

Twenty studies measured quality of life following a nurse-led intervention. Of the 20 studies, eleven reported a statistically significant improvement in the quality of life after 12 months (e.g. Jaarsma et al., 2000; McHugh et al., 2001; Harrison et al., 2002; Mayou et al., 2002) and 2 years (Meng et al., 2007). Of the eleven studies, two studies (i.e. Burton and Gibbon, 2005; Stromberg et al., 2006) used strong nurse-led interventions. Six studies reported an improvement which was not, however, statistically significant (Dougherty et al., 2004; Tranmer and Parry, 2004; Carroll and Rankin, 2006; Dalal et al., 2007; Holst et al., 2007; Meng et al., 2007) and one (Burton and Gibbon, 2005) of them included strong nurse-led interventions. Three studies (i.e. Moher et al., 2001; Karlsson et al., 2005; Brennan et al., 2010) reported no effect following the intervention even though Dalal et al. (2007) used a strong nurse-led intervention. One study (Davidson et al., 2005) reported, however, a deterioration of quality of life in the intervention group. This study included a small sample size. Overall, a significant improvement in the quality of life was reported following a nurse-led intervention.

A variety of self-report questionnaires were used to measure quality of life and all used validated tools, except one study (Meng et al., 2007) which did not report which tool was used. Six studies (i.e. McHugh et al., 2001; Harrison et al., 2002; Murchie et al., 2004; Tranmer and Parry, 2004; Smith et al., 2005; Carrol and Rankin, 2006) used the SF-36 (Ware and Sherbourne, 1992; Garatt et al., 1993; McHorney et al., 1993; Ware et al., 1993), two studies (Dougherty et al., 2004; Brennan et al., 2010) used the SF-12 (Ware, 1987; Ware et al., 1998; Resnick and Nahm, 2001) and one (Dougherty et al., 2004) of these two studies also used the Patient Concerns Assessment (PCA) questionnaire (Jenkins et al., 1997). Goodman et al.'s (2008) study used both the Coronary Revascularisation Outcome Questionnaire CROQ (Schroter and Lamping, 2004) and the SF-36 (Ware et al., 1993). Woodend et al.'s (2008) study used both the SF-36 (Ware et al., 1993) and the Multidimensional Index for Life Quality questionnaire for CVD (MILQ) (Avis et al., 1996).

Additionally, one study (Burton and Gibbon, 2005) used the Nottingham Health Profile (Hunt et al., 1980); another study (Dalal et al., 2007) used the MacNew questionnaire (Valenti et al., 1996). Two studies (Davidson et al., 2005; Torres-Arreola et al., 2009) used both the Barthel Index (Mahoney and Barthel, 1965; Collin et al., 1988) and the Frenchay Index. Karlsson et al.'s (2005) study used a Mini Mental State Examination (MMSE) (Folstein et al., 1975). A further study (Jaarsma et al., 2000) used the Heart Failure Functional Status Inventory (Dracup et al., 1992). Mayou et al.'s (2002) study utilised the Dartmouth COOP charts (Beaufait et al., 1992). Additionally, one study (Moher et al., 2001) used both the Dartmouth COOP charts (Nelson et al., 1987) and the EuroQol questionnaire (EuroQol group, 1990). Two studies (Stromberg et al., 2006; Holst et al., 2007) used the EuroQol (EQ-5D) (EuroQol group, 1990).

- **Anxiety and depression**

Four studies measured depression, five studies measured anxiety and five studies measured both anxiety and depression. Of the four studies which measured depression, only one reported a non-significant reduction in depression (Little et al., 2004), while the other two studies (Burton and Gibbon, 2005; Tseng et al., 2007) found no effect following the intervention despite Burton and Gibbon (2005) implementing a strong nurse-led intervention. Of the five studies which measured anxiety alone, two studies reported a statistically significant reduction in anxiety levels (Hartford et al., 2002; Moser et al., 2012) and three studies (Dougherty et al., 2004; Dalal et al., 2007; Goodman et al., 2008) reported a reduction in anxiety level which was not, however, statistically significant. Of the five studies which measured anxiety and depression, four studies (McHugh et al., 2001; Mayou et al., 2002; Gallagher et al., 2003; Mittag et al., 2006) reported a statistically significant improvement and one study (Murchie et al., 2004) reported no effect following the nurse-led intervention. Overall, a significant reduction in both anxiety and depression was reported following a nurse-led intervention but not in depression alone.

Two studies (Dalal et al., 2007; Goodman et al., 2008) measured anxiety by the Hospital Anxiety and Depression Scale (Zigmond and Snaith, 1983; Wilkin et al., 1992); one study (Dougherty et al., 2004) used both the State-Trait Anxiety Inventory (STAI) (Speilberger et al., 1970) and the Centre for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977). Hartford et al.'s (2002) study used the Beck Anxiety Inventory (Beck et al., 1988) and Moser et al.'s (2012) study used the Multiple Affect Adjective Checklist (Zuckerman et al., 1965). The three studies (Little et al., 2004; Burton and Gibbon, 2005) measured depression using the Hospital Anxiety and

Depression Scale (Wilkin et al., 1992) and the Beck Depression Inventory (Beck et al., 1996). Tseng et al. (2007) used the Chinese version of Geriatric Depression Scale – Short Form (GDS-15).

Anxiety and depression together were measured using the Hospital Anxiety and Depression Scale (Zigmond and Snaith, 1983; Pryor, 1993) in four studies (McHugh et al., 2001; Mayou et al., 2002; Gallagher et al., 2003; Murchie et al., 2004) while one study (Mittag et al., 2006) used both the Centre for Epidemiological Studies Depression Scale (CES-D) and symptom checklist-90 [SCL-90] (Franke, 2002).

- **Psychosocial adjustments**

Two studies measured psychosocial adjustment and found statistically significant improvements in psychosocial adjustment to the illness after a period of three to nine months (Jaarsma et al., 2000; Gallagher et al., 2003). Studies by both Jaarsma et al. (2000) and Gallagher et al. (2003) used the Psychosocial Adjustment to Illness Scale (PAIS) (Derogatis, 1976; Derogatis, 1986) to measure psychosocial adjustment.

3.3.1.7 Summary of the nurse-led interventions

The majority of nurse-led interventions resulted in positive outcomes on the following objective clinical measures: BP control ($p<0.05$), reduced cholesterol level ($p<0.05$), increased physical activity ($p<0.05$) and weight management ($p<0.05$). However, the effect of nurse-led interventions on promoting smoking cessation was not always positive. Further, in the majority of studies, nurse-led interventions also had positive effects on various self-report outcome measures, including increased physical activity ($p<0.05$) and lower disease symptoms ($p<0.0.05$) but again there were no consistent findings relating to smoking cessation. In terms of care outcomes, in the majority of

nurse-led intervention studies resulted in an increase in patients' disease knowledge ($p<0.05$), self-efficacy ($p<0.05$), adherence to medication and physical activity ($p<0.05$), reduction in healthcare utilisation ($p<0.05$) and satisfaction with the nurse-led interventions ($p<0.05$). However, nurse-led interventions had less positive effects on the self-care management behaviours of patients with CVD. Interestingly, the selected RCTs revealed that the nurse-led interventions increased the patients' quality of life ($p<0.05$) and significantly reduced the levels of the patients' anxiety and depression ($p<0.05$).

3.3.2 Nurses' perceptions of the nurses' role in health promotion relating to CVD

A search of the literature found limited studies which have explored the role of nurses in health promotion related to CVD conducted in the Middle East/Jordan. This section includes 29 studies which explored the role of nurses in health promotion relating to CVD from the perspective of nurses (See Table 3.4). Fifteen studies used qualitative approaches, 13 studies utilised a cross-sectional survey design and one study used mixed methods approach. Data collection procedures included self-report questionnaires (n=14), interviews (n=14), focus groups (n=1) and observation (n=2). The studies originated from 13 countries, including: Australia (n=2), Canada (n=1), China (n=2), Cyprus (n=1), Hong Kong (n=1), Iran (n=2); Ireland (n=1); Netherlands (n=2); South Korea (n=1), Sweden (n=5), the UK (n=4), the USA (n=5) and Taiwan (n=2). Four themes emerged from the literature review regarding nurses' views on their role in health promotion and CVD including *"Nurses' views of their activities", "Constraints to health promotion relating to CVD", "Patients' learning needs and involvement" and "Nurses' knowledge of CVD".*

Table 3.4: Selected nurse perception studies for literature review

No	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
1.	Albert et al. (2002) USA	Cross-sectional survey (n=300) from acute care hospital, community hospitals, home care and hospice palliative care Convenience sampling-multiple sites	HF management (20-item) questionnaire developed for the study	• The mean knowledge score was 76% (15.2 out of 20; SD± 2) • Home care nurse scored higher knowledge than hospital and palliative care nurses (p=0.004). • Palliative care nurses had higher score than critical care nurses, medical-surgical nurses and community nurses (p<0.001)	Moderate • Multiple sites • Adequate sample size • Non- random sampling used • Response-rate not reported • Validity and reliability of the instrument reported • Details of nurses' characteristics not reported
2.	Aminoff and Kjellgren (2001) Sweden	Qualitative study RNs (n=4) from four healthcare centres only F, Age 29-58 years Consecutive sampling-multiple sites	Audio-recording of patients' follow-up appointments with their nurses.	• 50% of consultations were intermediate length, 40% were short and 10% were long. • Nurses used more structured manner of asking and educating patients • Nurses were skilful in health promotion	Moderate • Small sample size • Transcripts carried out by two authors independently • No software used to manage the data • Only female
3.	Arnetz et al. (2008) Sweden	Cross-sectional survey Nurse (RNs) (n=303), Licensed Practical Nurses (n=132) from 12 hospitals, 84% M and 16% F Convenience sampling - multiple sites	Structured questionnaire developed from previously validated questionnaire	Study reported constraints to the nurses' role in health promotion including: • Communication problems • Language and culture barriers • Patients' unwillingness to communicate • High workloads	Moderate • Multiple sites • Adequate sample size • Non-random sampling used • Response rate 67% • Validity and reliability of the instrument reported • Confounders reported (age)
4.	Barnason et al. (2011) USA	Cross-sectional survey Cardiac Rehabilitation (CR) nurse (n=81), acute care nurses (n=239), 4% M and 96% F Mean age 44.6 ± 11.2 years, Convenience sampling -seven sites	Survey of Sexuality Related Nursing Practice-Myocardial Infarction (SSNRP-MI) questionnaire	• Acute care nurses perceived more barriers than CR nurses • CR nurses perceived higher role responsibility to provide sexual counselling than acute care nurses • CR nurses were more likely to provide sexual counselling (p<0.0001)	Moderate • Multiple sites • Adequate sample size • Non-random sampling used • Response rate not reported • Validated and reliability of the questionnaire reported • 96% female

No	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
5.	Barreca and Wilkins (2008) Canada	Qualitative study Nurses (RNs and practical nurses) from a stroke rehabilitation unit (n=8) M and F Mean age 50 years; Purposive sampling- one site	Open-ended interviews	• Nurses valued their role in health promotion • Constraints to the nurses' role: workloads and frustration related to a poor relationship with management; and devalued nursing role by patients, their families and team members.	Moderate • Data saturation achieved • Thematic analysis and field notes used
6.	Chen et al. (2011) Taiwan	Cross-sectional survey RNs (n=1431) from ten hospital settings 3.2% M and 96.8% F Mean age 31.1 years, Purposive sampling - ten sites	The Hypertension Management Questionnaire (HMQ)	• The mean percentage of correct answers was 68.5% • ICU nurses had higher knowledge scores compared to those working in a medical ward ($p=0.018$), surgical ward ($p=0.001$) and the emergency room ($p=0.013$) • Factors including nurses' clinical experience ($p<0.001$), work settings ($p<0.001$), positions ($p<0.001$), level on the career ladder ($p<0.001$) and level of hospital ($p<0.001$) were significantly related to the nurses' awareness of hypertension guidelines.	Strong • Multiple sites • Large sample size • Non-random sampling used • High response rate (95.9%) • Validated instrument used • 96.8% female
7.	Choi-Kwon et al. (2005) South Korea	Cross-sectional survey Nurses (n=57) working in the neurology and neurosurgery Department only F Mean age 27years Convenience sampling -one site	A structured questionnaire developed for the study	• Nurses reported significantly higher rankings for "patients' needs to know about stroke education" than doctors or patients ($p<0.01$) • The rankings of medical knowledge regarding stroke was higher in patients and nurses than in doctors ($p<0.05$). • The rankings of rehabilitation and post-stroke problems were higher in nurses than in doctors ($p<0.05$) and were higher in nurses than in patients ($p<0.05$). • The average ranking of post-stroke diet management were lower for doctors than for patients or nurses ($p<0.05$).	Moderate • One site • Adequate sample size • Non-random sample • Response rate not reported • Validity and reliability of the instrument reported • Only female
8.	Delaney et al. (2011) USA	Cross-sectional survey Nurses (n=94) from nursing home care agencies 2% M and 98% F Mean age 47.4 years Convenience sampling -four sites	The HF management questionnaire (20-item)	• The mean score for knowledge was 78.9% (15.78 out of 20; SD±1.69) • Nurses requested further information in medications (35.1%), diet (31.9%) and fluids or weights (31.9%)	Moderate • Multiple sites • Adequate sample size • Non-random sample used • Response rate 57.6% • Validity and reliability of the instrument reported

No	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
9.	Eldh et al. (2006) Sweden	Qualitative study Nurse (n=2) from a nurse-led outpatient clinic at one hospital setting Purposive sampling - one site	Observations (n=11) and interviews (n=3)	• Nurses experienced patient participation by feeling satisfied when recognising information they received. • Nurses experienced patient non-participation by not accepting information.	Weak • Small sample size • Field notes used • Sequential triangulation performed • Details of nurses' characteristics not reported
10.	Eriksson and Nilsson (2008) Sweden	Qualitative study District nurses (n=10) from primary healthcare districts only F Mean age 48 years Convenience sampling - three sites	Face-to-face interviews	• Trust was essential part for counselling patients who had hypertension • District nurses highlighted the importance of their competence to build a trusting relationship with patients including awareness of expression (communication skills orally and non-verbally), communication skills and professional credibility • They also emphasised on continuity of care (e.g. follow-up) and the importance of respectful communication	Moderate • Multiple sites • Thematic analysis used • Analysis was re-examined by another author (i.e. to ensure validity) • Only female
11.	Farahani et al. (2008) Iran	Qualitative study nurses (n=18) and cardiovascular doctors (n=4), patients (n=9), family members (n=4) from two teaching hospitals, 22% M and 78% F Purposive sampling- two sites	Semi-structured interviews	• Health professionals hierarchy with doctors considering as highest authoritative person and having a high level of science and knowledge • Nursing role is not recognise in health promotion • Nurses are able to understand physical, emotional and social characteristics of the patient and the family more than any other health professionals • Ineffective communication such as patients-health team relationship, the language and ethnic variations in patient populations are hindrances of education.	Moderate • Inter-rater reliability in data analysis reported • Two members checked analysis to ensure credibility • Patients' age not reported • Thematic analysis used • 78% female

No	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
12.	Farahani et al. (2011) Iran	Qualitative study nurses (n=18; mean age 35 years) and cardiovascular doctors (n=4), patients (n=9, mean age 58.7 years), family members (n=4) from two teaching hospitals, 22% M and 78% F Purposive sampling- two sites	Semi-structured interviews (10-30 minutes)	• Nurses asserted that inappropriate communication relating to lack of communication and coordination, indifference, paternalism and contempt with doctors. • Lack of professional respect and support to nursing staff were frequently highlighted by nurses • Nurses felt that patients did not trust them as they consistently kept asking the same question	Moderate • Codes re-examined for validation • Saturation was attained • Thematic analysis used • 78% female
13.	Halcomb et al. (2008) Australia	Mixed methods study practice nurses (n=294) 99% F Mean age 45.8 years, Convenience sampling and random sampling-multiple sites	Semi-structured interviews and a questionnaire developed for the study	• Barriers for the nurses' role in management CVD: legal implications, limited space or equipment, a belief of appropriateness of their current role and doctor attitudes • Facilitators: collaboration with doctors, providing education and training, having the opportunity to provide primary healthcare, high job satisfaction and positive clients' feedback.	Moderate • Multiple sites • Adequate sample size • Random sampling for telephone interviews • Validity of the instrument not reported • Thematic analysis was used • 99% female
14.	Harding et al. (2008) UK	Qualitative study Nurses (specialist nurses n=5, community nurses n=2) from outpatient clinic and hospital wards Purposive sampling- one site	Semi-structured interviews (43 interviews)	• Nurses described non-adherence as a consequence of lack of understanding • Constrains for health promotion were difficulty in identified prognostication, communication difficulties, lack of confidence and skills, lack of knowledge and inadequate time • Nurses recommended mutual education and joint working between cardiology and palliative care	Moderate • Inter-rater reliability reported • Small sample size • Software used to manage the data • Analysis was re-examined by another author (i.e. validity) • Details of nurses' characteristics not reported • No details on the study context reported

No	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
15	Hernandez and Anderson (2012) USA	Qualitative study Nurses Practitioners NPs (n=8) from different practices M and F Age 31-53 years, Purposive sampling- multiple sites	Semi-structured interviews (30-90 minutes)	• Constraints to the NPs' role were financial barriers, lack of time and role ambiguity • The experiences in the practice resulted in frustration and confusion but each NP • Health promotion role is important for the care of pre-hypertension patients.	Moderate • Multiple sites • Thematic analysis and field notes were used • In depth analysis was reported • No details on the study context reported
16.	Hoekstra et al. (2010) Netherlands	Cross-sectional study Patients with heart failure (n=442) and RNs (n=32) from 17 hospitals 30% M and 70% F Mean age 68±12 years Random sampling- multiple sites	A questionnaire designed for the study	• 70% of RNs reported that the basic intervention was sufficient, 20% not intensive enough and 10% too intensive. • 56% of the RNs reported that the intensive nurse-led intervention was sufficient with 43% reporting too intensive. • TNs reported that the treatments and education goals with patients were achieved; but it was higher in the intensive intervention (87%) than the basic intervention (76%). • Non-compliant patient was a reason for not achieving goals in the both basic and intensive interventions • A lack of time was a reason for not achieving goals in the basic intervention.	Strong • Multiple sites • Adequate sample size • Random sampling • 86% response rate • Validated instrument used • 70% female
17	Kalogirou et al. (2013) Cyprus	Cross-sectional survey Nurses (n=143) working in cardiac, intensive care units and internal medicines), 30% M and 70% F Convenience sample –five sites	The HF management questionnaire (20-item)	• The means knowledge score was 67.8% (13.57 out of 20; SD 2.33) • Intensive care units nurses had higher knowledge than cardiac nurses and internal medicine nurses (p=0.0018)	Moderate • Multiple sites • Adequate sample size • Non-random sampling was used. • The response rate was 56.7% • The validity and reliability of the instrument reported • 70% female

No	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
18.	Kilonzo and O'Connell (2011) Ireland	Cross-sectional survey Nurses (n=13, Only F) and patients (n=33 78% M and 22% F; 40-89 years) from a hospital setting Convenience sampling-one site	The Nursing Information and Support scale (NIS)	• Secondary prevention, smoking, risk factors and eating habits were highest importance needs for patients with heart disease • Post-discharge care, medication, exercise and usual activities were less importance • Patient rated "individual nursing counselling" as 4th in importance, while nurses ranked it as 17th ($p<0.01$).	Moderate • One site • Small sample size • Non-random sampling used • Response rate not reported • Validity and reliability of the instrument reported • Only female
19.	Leung et al. (2005) Hong Kong	Qualitative study RNs (n=8) recruited from four general outpatient clinics M and F Age 31-40 years Stratified and purposive sampling-multiple sites	Focus groups	• "Health knowledge gain" as one of the outcome achieved by the health promotion programme by nurses. • Nurses reported that good preparation and presentation skills and techniques were valuable in health promotion • Expectation raised by nurses were client empowerment, improved nurse-client relationship and peer support, behaviour change, health education outcomes and intermediate health outcomes.	Moderate • Multiple sites • No details on the study context reported • Lack of details on the data analysis
20.	Lin et al. (2008) Taiwan	Cross-sectional study hospital nurses from medical and cardiac settings (n=64; 20-50 years), nursing students (n=134), only F Convenience sampling-three sites	The version 1 of the York Cardiac Beliefs Questionnaire (YCBQv1)	• There were no difference regarding cardiac misconception between cardiac nurses and nurses working in medical wards • Nursing students reported fewer cardiac misconceptions than nurses ($p=0.042$). • Length of experience ($p=0.019$) and education level ($p=0.027$) were statistically associated with the level of cardiac misconceptions	Moderate • Multiple sites • Adequate sample size • Non-random sampling was used. • High response rate 91% • Validity and reliability of the instrument reported • Only female

No.	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
21.	Macintosh et al. (2003) UK	Qualitative study Practice nurses (n=14) and general practitioners (n=4) from 11 healthcare centres Purposive sampling -eleven sites	Semi-structured interviews	• Nurses reported lack of coordination between secondary and primary care. • The nurses had positive views about their role in the cardiac rehabilitation. • The most common activities delivered by nurses were dietary advice, engaging in smoking cessation support and checking blood pressure and cholesterol. • Nurses reported less confidence in promoting physical exercise	Moderate • Adequate sample size • Analysis was repeated by more than researcher to ensure the reliability • Nurses' characteristics not reported
22.	Segaar et al. (2007) Netherlands	Cross-sectional survey cardiac RNs (n=210) from 25 cardiology wards 11% M and 89% F Mean age 36 years Cluster random and convenience sampling-multiple sites	A questionnaire developed from existing instruments	• 46% of nurses were non-adherent users with intervention with 54% adherent users • Motivational factors included positive social norms ($p<0.01$) and having a high-level of self-efficacy ($p<0.01$) • Post-motivational factors including more skills ($p<0.01$), high general goal actions ($p<0.01$), barriers ($p<0.05$) and availability of materials ($p<0.01$)	Moderate • Multiple sites • Adequate sample size • Cluster random sampling • 38% response rate (non-response bias) • Validity and reliability of the instrument reported • 89% female
23.	Smallwood (2009) UK	Qualitative study cardiac nurses (n=7) who worked in a single cardiac centre in a UK hospital Convenience sampling- one site	Semi-structured interviews (n=7, 30 minutes) , participant observations (n=5) and a reflective fieldwork journal	• The main roles of the cardiac nurses were gatekeeper, specialist consultancy practice, catalyst and diplomat • The gatekeeper role was related to identify and prioritise patients for immediate cardiac care or further investigations • The role of the specialist consultancy practice was related to provide early and ongoing care • The catalyst role was linked with coordination of care between clinical settings and continuous management of patients • The diplomatic role was related to representing cardiac services to the wider hospital organisation	Moderate • Small sample size • Field notes were used • Data were collected from three data sources (triangulation)

No.	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
24.	Sundin et al. (2001) Sweden	Qualitative study RNs and enrolled nurses (n=5) from a medical rehabilitation ward Age 27-64 years Purposive sampling-one site	Semi structured Interviews (30-60 minutes)	• Nurses felt the obligation to provide the best care possible to patients • The patients accepted of being dependent on the nurses • Nurses respected the uniqueness of the patients and felt satisfied with their role. • Nurses felt the rehabilitation process should be adjusted to l patients' capacities and desires.	Moderate • Small sample size • The procedure for data analysis clearly described • Recruitment strategy described
25.	Wang et al. (2009) China	Qualitative study Nurses working in a teaching public hospital (n=18) Mean age 42.6 years (22-65 years) Purposive sampling-one site	Semi-structured interviews	• No established hospital policy to assign health promotion as a legitimate aspect of nurses' role • Constrains including insufficient staff or time to educate patients • Nurses provided health promotion on quitting smoking and taking exercise • They did not provide information about the medication and treatment because they felt it was the doctor's responsibility • Constrains included limited healthcare resources	Moderate • Adequate sample size • Recruitment strategy described • Data analysis clearly described • Thematic analysis and field notes were used
26.	Washburn et al. (2005) USA	Cross-sectional survey RNs (n=51) working in a small community hospital Convenience sampling- one site	The Nurses' Knowledge of Heart Failure Education Principles questionnaire	• The mean HF self-care knowledge score was 14 ± 2 (range = 8-19) • High-scoring questions contained content from all 5 topic themes (diet, fluids or weight, sign or symptoms of worsening condition, medications, and exercise) • Low-scoring questions contained content from 4 of the 5 themes (all except activity).	Moderate • One site • Small sample size • Non-random sampling reported • Response rate not reported • Validity and reliability of the instrument reported • Nurses' characteristics not reported

No.	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
27.	Wu et al. (2011) China	Cross-sectional survey RNs (n=273) from two hospitals, faculty nurses (n=35) and nursing students (n=139) from two universities, M and F Mean age 26.6 years, Stratified random sampling- four sites	A questionnaire designed for the study	• The mean percentage of correct answers of the RNs was 84% • 70% of the participants in each group recognised most of the risk factors of CVD • The majority (95%) of the participants did not undertake physical exercise. • RNs had the lower correct response rate in weight management (BMI) compared to others ($p<0.05$) • The majority of participants had positive attitudes toward CVD risk reductions and lifestyle modifications • Lack of time, patients' unwillingness to change their lifestyles and lack of doctors' support were barriers for health promotion regarding CVD • Over 70% did not do an assessment of their blood lipids within the last five years	Strong • Multiple sites • Adequate sample size • Stratified random sampling • High response rate 100% • Validated and reliability of the instrument tested
28.	Wotton et al. (2005) Australia	Qualitative study RNs, clinical nurse consultants and clinical nurses or nurse managers (n=17) recruited from three acute care wards in public hospitals and five community centres Age 25-55 years Purposive sampling- multiple sites	Semi-structured interviews (one hour)	• Nurses reported the importance of having knowledge and skills for the provision of care to patients with ESHF. • Constrains including inadequate communication, the involvement of different health professionals and disciplines and the relations among team members • Needing for communication, negotiation, and advocacy were seen by nurses as the most frustrating and time consuming aspects of their role. • Nursing shortages and cost cutting were made it difficult for nurse-patient rapport. • Unmet the physical needs of patients led to nurses' frustration. • Dyspnea caused considerable anxiety for inexperienced nurses in using morphine for patients with ESHF.	Moderate • Adequate sample size • Recruitment strategy described • The procedure for data analysis clearly described • Analysis was repeated by more than researcher to ensure the reliability • No details about the study context reported • Nurses' gender not reported

No.	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
29.	Wright et al. (2001) UK	Qualitative study Practice nurses (n=6) from six practices Age ranged from 38 to 61 years Random sampling-multiple sites	Semi-structured interviews (an average of one hour) and one focus group	• All nurses were confident to undertake health promotion. • Some nurses were less competent in exploring patients concerns, and understanding of their condition, medication and prevention. • Nurses felt that they lacked adequate knowledge about medication and heart conditions in general. • Nurses reported that patients were interested to attend the assessment. • Nurses thought that patients who did not attend had either accepted their condition or could see no point in having an assessment. • Nurses viewed discussing concerns, reassuring and supporting patients as the main benefits of assessments. • Nurses were perceived as bridging the medical and patient worlds.	Strong • Multiple sites • Small sample size • Random sample • Recruitment strategy described • Data analysis clearly described • Nurses' gender not reported

- **Nurses' views of their activities**

Nine studies reported the nurses' views of their activities (i.e. Sundin et al., 2001; Macintosh et al., 2003; Leung et al., 2005; Segaar et al., 2007; Barreca and Wilkins, 2008; Smallwood., 2009; Wang et al., 2009; Hoekstra et al., 2010; and Hernandez and Anderson, 2012).

Sundin et al. (2001) conducted a qualitative study using semi-structured interviews to explore the experience of the RNs and enrolled nurses (n=5) of the care relationship with patients who had stroke and aphasia from a medical rehabilitation ward in northern Sweden. The nurses felt the responsibility to provide the best care possible to patients. The nurses respected the uniqueness of the patients and felt satisfied about their role. The nurses felt that the rehabilitation process should be adjusted to individual patients' capacities and needs.

Similarly, Macintosh et al. (2003) conducted a qualitative study using semi-structured interviews to explore the perceptions of primary healthcare professionals (practice nurses, n=14; general practitioners, n=4) of the benefits of the cardiac rehabilitation intervention for coronary heart disease from healthcare centres in the UK. The nurses reported lack of coordination between secondary and primary care which caused problems in continuity of care. The nurses were enthusiastic about their role in the cardiac rehabilitation. The most common activities delivered by nurses were dietary advice, engaging in smoking cessation support and checking blood pressure and cholesterol. However, they reported less confidence in promoting physical exercise.

Leung et al. (2005) conducted a qualitative study using semi-structured interviews and focus groups with RNs (n=8) and patients (n=16) recruited from four general outpatient clinics in Hong Kong. They found that the nurses reported positive views regarding

their role, and felt a sense of achievement and self-enhancement. Barreca and Wilkins (2008) conducted a phenomenological study using open-ended interviews to explore the perceptions, beliefs and feelings of RNs (n=8) providing care in a stroke rehabilitation unit in Canada. The RNs reported positive views regarding their role in health promotion and emphasised the importance of this role. For example, they reported enjoying providing care to stroke survivors. In addition, they perceived themselves as independent healthcare professionals with different responsibilities than other healthcare professionals. They raised issues, however, including high workloads and frustration related to poor relationships with hospital management who, for example, did not involve them in decision-making or communicate decisions once made. The nurses highlighted that the patients, their families and team members did not value the nurses' roles.

Similarly, Wang et al. (2009) conducted a qualitative study using semi-structured interviews to explore healthcare professionals' perceptions (cardiologists, n=2; doctors, n=4; head nurses, n=2; RNs, n=10) of the cardiac rehabilitation for patients with coronary heart disease in Mainland China. The sample was recruited from two cardiac wards. Some RNs reported that they performed health promotion relating to risk factor modifications including smoking cessation, weight management and taking exercise. The head nurses highlighted that nurses rarely, however, provided information about medication and treatment to patients since they reported that it was the doctors' role. The RNs reported that lack of attention by the hospitals administration was one of the problems affecting their role. Some RNs also stated that they were not involved in the rehabilitation services for CHD patients as the hospital policy did not assign this as a legitimate aspect of their work. The RNs reported that lack of time and shortages of RNs were additional constraints to health promotion.

Segaar et al. (2007) conducted a cross-sectional survey to examine the dissemination of innovations by cardiac RNs (n=207) (38% response rate), specifically in the implementation of the minimal intervention strategy for smoking cessation for cardiac inpatients (C-MIS) in the Netherlands. The sample was recruited from 25 wards which were randomly selected from 39 Dutch cardiology wards. The study revealed that 46% of the RNs were not implementing interventions (non-adherent to the intervention), with 54% reporting implementation (adherent to the intervention). Among all the RNs, 48% never performed follow-up care. The study highlighted some pre-motivation, motivational and post-motivational factors for adherence of the RNs. Pre-motivation factors included age ($p<0.01$), length of experience ($p<0.05$), working in wards where there were no smoking rooms for nurses ($p<0.01$), involvement in the decision to implement the intervention at ward level ($p<.01$), having received information about the use of the intervention ($p<0.01$), having more knowledge about the intervention ($p<0.01$) and being more convinced of the importance of smoking cessation support by nurses ($p<.05$). Motivational factors included positive social norms ($p<0.01$) and having a high-level of self-efficacy ($p<0.01$). Post-motivational factors included having more skills ($p<0.01$), using the intervention cards when delivering health promotion ($p<.01$), few barriers ($p<0.05$) and availability of materials ($p<0.01$). This study also examined the factors associated with adherence using Pearson correlation and found that adherence was associated strongly with use of the intervention card for health education ($r=0.51$) and having a high-level of CVD knowledge ($r=0.28$).

Smallwood (2009) conducted a qualitative study using semi-structured interviews, participant observation and a reflective fieldwork journal to explore the roles of cardiac assessment (CA) team (i.e. experienced cardiac and emergency care nurses) who provided care for acute coronary syndrome patients. The sample involved cardiac nurses

(n=7) who worked in a single cardiac centre in a UK hospital. The study reported that the main roles of the CA team comprised gatekeeper, specialist consultancy practice, catalyst and diplomat. The gatekeeper role was related to appropriately identifying and prioritising patients if they require immediate cardiac care or further investigations. The role of the specialist consultancy practice was providing early and ongoing care such as information and autonomous drug administration. The catalyst role was linked with coordination of care between clinical settings and continuous management of patients, whereas the diplomatic role was related to representing cardiac services to the wider hospital organisation. The study suggested that these roles could expand or contract according to the culture of the clinical area where the CA team worked.

Hoekstra et al. (2010) conducted a cross-sectional survey to explore the perceptions of patients with heart failure (n=442) and RNs (n=32) within disease management programmes (i.e. basic and intensive nurse-led interventions) in 17 hospitals in the Netherlands. They found that 70% of the RNs reported that the basic intervention was sufficient, with 20% reporting that it was not intensive enough, and 10% that it was too intensive. Over half (56%) of the RNs reported that the intensive nurse-led intervention was sufficient, whereas 43% reported that it was too intensive. The RNs also reported that the treatments and education goals with patients were better achieved as a result of the intensive intervention (87%) than as a result of the basic intervention (76%). The RNs also reported that the non-compliant patient was a reason for not achieving goals in any of the group interventions (basic and intensive), and a lack of time was a reason for not achieving goals in the basic intervention. The majority (90%) of the RNs did not report any physical or emotional burdens when providing care to patients. Most (88%) of the RNs reported that home visits added value to the patients' treatments.

Hernandez and Anderson (2012) conducted a qualitative study, using semi-structured interviews to explore the experiences of primary care Nurses Practitioners (NPs) (n=8) using nursing practice narratives to gain a deeper understanding of care provided for pre-hypertensive individuals in the United States. The study revealed three major themes from the experience of the NPs including the reality of practice, the ambiguous NPs' role identity and bridging the medical and nursing models. The NPs who had extensive clinical experience reported increased demands for efficiency over the last decade and as a consequence the role of the NPs in health promotion was threatened by the demands of a busy clinical environment. They also reported that time constraints and financial issues (i.e. billing for healthcare services) further affected their role in practice. Ambiguity in the role of the NPs relating to health promotion was recognised and seen as a reflection of the theory-practice gap. The NPs reported frustration and confusion at "how I practice and how I thought I would be". Furthermore, they reported the challenge of having to combine the medical model and the nursing model in order to address health promotion, for example, for pre-hypertensive patients. Some felt pressure to follow the medical model while others asserted that the nursing model remained the core model underpinning their practice. The NPs also suggested that the pressures within the practice environment made it difficult for self-reflection. Some NPs stopped providing health promotion after encountering anger from patients when discussing their lifestyle changes. The NPs reported feelings of frustration for patients' lack of commitment to change and feelings of helplessness, given that some patients were unwilling to take health promotion seriously.

- **Constraints to health promotion relating to CVD**

Health promotion was influenced negatively by a number of constraints including lack of time and staff (Wang et al., 2009; Wu et al., 2011; Hernandez and Anderson, 2012),

cultural/language differences (Arnetz et al., 2008; Farahani et al., 2008; Farahani et al., 2011), patients' unwillingness (Arnetz et al., 2008; Wu et al., 2011; Hernandez and Anderson, 2012), lack of knowledge and skills (Harding et al., 2008), lack of doctors' support and lack of nurse autonomy (Halcomb et al., 2008; Farahani et al., 2011; Wu et al., 2011), limited healthcare resources and inadequate communication (Wotton et al., 2005).

A mixed methods study (Halcomb et al., 2008) of a convenience sample of 294 Australian general practice nurses aimed to identify the barriers and facilitators to developing the practice nurse role in CVD management. The main barriers identified for the practice nurses' role were legal implications (51.6%), limited space or equipment (30.8%), a negative belief of appropriateness of their current role (29.7%) and negative doctor attitudes (28.7%). The dominant role of the doctor in practice was a reported barrier for their scope of practice and limited their role in the management of CVD. In addition, the doctors devalued the practice nurses' role in patient education, risk factors screening, symptoms monitoring and health assessments. Facilitators for the practice nurses' role in health promotion were collaboration with doctors (87.6%), providing education and training (65.6%), having the opportunity to provide primary healthcare (61.0%), high job satisfaction (56.0%) and positive client feedback (54.6%). The study sample were recruited from multiple sites. However, the study did not report the response rate achieved and non-random sampling used.

Wotton et al. (2005) conducted a qualitative study using semi-structured interviews to describe nurses' perceptions of factors influencing care for patients in the palliative phase of end-stage heart failure (ESHF). The study sample comprised RNs, clinical nurse consultants and clinical nurses or nurse managers (n=17) recruited from three

acute care wards in public hospitals and five community centres in metropolitan Adelaide, Australia. The nurses reported the importance of having knowledge and skills for the provision of care to patients with ESHF. Long term relationships and greater knowledge of patients were reported as significant factors when providing health promotion to patients. The community cardiac RNs were reluctant to provide more information about the severity and progression of the disease because the patients were either in denial or unaware of the severity of their illness. The palliative care RNs highlighted that inadequate communication, the involvement of different health professionals and disciplines, and the relationships among team members undermined effective health promotion. The need for communication, negotiation, and advocacy were seen by the RNs as the most frustrating and time consuming aspects of their role. Nursing shortages and cost cutting made it difficult for the development of nurse-patient rapport. Unmet physical needs of the patients led to RNs' frustration. Even though the nurses possessed the skills to care for ESHF patients, the RNs reported that they seldom had enough time. The sample nurses believed that the patient care should not be delivered without the identification of a professional "as the point-person responsible for decision making" (p. 22).

Additionally, the sample nurses reported that the cardiac team should remain the principle team for delivering palliative care. Symptoms including dyspnea caused considerable anxiety for the inexperienced nurses in using morphine for the patients with ESHF. The reluctance by the doctors to issue the order "not for resuscitation" influenced the nurses' ability to address and implement orders for end-of-life care patients. The nurses were often the ones to begin communication between the multidisciplinary team. The study was conducted in multiple sites.

Arnetz et al. (2008) conducted a cross-sectional survey using a questionnaire developed for the purpose of the study to measure and compare perceptions and behaviour of patient involvement among a sample (67% response rate) of Swedish doctors (n=53) and nurses (n=435) caring for patients with acute myocardial infarction in cardiology departments of 12 hospitals. The licensed practical nurses reported that feeling unsure was a barrier to their communication with patients compared to the doctors ($p<0.001$) and the RNs ($p<0.001$). The licensed practical nurses reported both cultural/language differences and that the patients' relatives were hindrances in comparison to the doctors ($p<0.05$) and the RNs ($p<0.01$). The patients' unwillingness to communicate was a barrier and was reported by more than 25% of all the participants, with more nurses reporting this than doctors ($p<0.05$). Almost all the participants agreed with the statement that patient involvement enriched their work. The doctors reported that the patient involvement increased their workload, compared to the RNs ($p<0.001$). Nearly all the RNs and doctors perceived that the patient involvement increased the possibilities for successful treatment.

Harding et al. (2008) conducted a qualitative study using semi-structured interviews with a sample of nurses (n=7). In Harding et al.'s (2008) study, the nurses reported that the patients' non-adherence could be related to a lack of understanding. They added that self-management was central to symptom control. The nurses reported that the barriers to effective health promotion included the difficulty in identifying prognostication, communication difficulties, lack of confidence and skills, lack of knowledge and insufficient time for communication and lack of contact with families. In Wang et al.'s (2009) study, most of the nurses argued that they did not have sufficient time or staff to undertake health promotion. Significantly, the limited healthcare resources were the most common barriers to the establishment of cardiac rehabilitation services. Similarly,

Hernandez and Anderson's (2012) qualitative study of primary care American NPs (n=8) found that lack of time and role ambiguity were barriers to their role in health promotion relating to hypertension.

Farahani et al. (2008) conducted a qualitative study using semi-structured interviews to identify the key issues relating to the cultural factors influencing the education of patients with CVD in Iran. The study sample comprised nurses (n=18), cardiovascular doctors (n=4), patients (n=9) and family members (n=4). The study revealed different opinions regarding who should undertake the health education of CVD patients. The nurses reported that some patients and their families considered the doctors to be the most authoritative healthcare professionals with high levels of knowledge. The authors argued that the nursing role is not recognised in Iran and that individuals remain unaware of the academic education and qualifications of nurses. All the nurses, doctors and some patients reported that nurses were more able to understand the physical, emotional and social characteristics of patients and families because of key characteristics such as patience, tolerance and constant presence with patients. In addition, this understanding could be related to the similarity between the economic and social status of nurses and patients. The barriers to health promotion included ineffective communication between patients and the healthcare team, language and ethnic variation considerations.

Farahani et al. (2011) conducted another qualitative study using semi-structured interviews to explore communication barriers from the perspective of nurses (n=18), cardiovascular doctors (n=4) and patients with unstable angina or suspected acute myocardial infarction (n=9) and their family members (n=4) in Iran. The nurses frequently asserted that there were communication difficulties, for example,

paternalism, indifference and in some instances contempt from the doctors. They added that indifference intimated a lack of professional respect and support for nursing staff, whereas lack of collaborative communication between the nurses and the doctors resulted in conflicting advice given to their patients. The patients and family members did not, therefore, trust the nurses' advice. The nurses felt that the patients did not trust them as they consistently kept repeating the same questions or it could be related to feeling anxiety. Additionally, gender identity issues were raised as another cultural barrier. One nurse, for example, described how patients from some ethnic backgrounds may refuse to remove a moustache since it may be associated with a male patient's identity, even if recommended for medical reasons.

- **Patients' learning needs and involvement**

Three studies (Aminoff and Kjellgren, 2001; Wright et al., 2001; Eriksson and Nilsson, 2008) focused on the nurses' assessment and structure of communication between nurses and patients; one study focused on the learning needs of patients (Kilonzo and O'Connell, 2011); and one study (Arnetz et al., 2008) focused on the patient involvement.

Aminoff and Kjellgren (2001) conducted a qualitative study with a sample of RNs (n=4) and patients with hypertension (n=20) to explore the content and structure of communication between patients and nurses at follow-up appointments concerning hypertension in Sweden. The nurses were found to be skilful in health promotion and used a more structured manner in educating patients. They also spent most of their time asking patients about the reasons that prevented them from changing their lifestyle. Notably, all the nurses in the study reported having training/further education in counselling patients. In Wright et al.'s (2001) study, the nurses similarly indicated that

the assessment during the nursing-led interventions had useful outcomes, including the provision of support and reassurance. They also reported that the patients generally responded favourably to the invitation to attend for an assessment. The nurses perceived that the patients who did not attend an assessment had either accepted their condition or could see no point in having an assessment. The nurses viewed both discussing concerns, reassuring and supporting patients as the main benefits of the assessments. The nurses were perceived as bridging the medical and patient worlds, for instance, by describing the patient's symptoms to the doctor and clarifying the doctor's advice to the patient (Wright et al., 2001).

Eriksson and Nilsson (2008) conducted a qualitative study using face-to-face interviews to identify the preconditions needed to build a trusting relationship during health promotion activity, namely, counselling between nurses and patients with hypertension. The data were collected from a convenience sample of district nurses (n=10) working in three primary healthcare districts in Sweden. The nurses reported that trust was crucial for counselling the patients regarding hypertension. The nurses highlighted the importance of paying attention to the manner of how nurses expressed themselves (orally and non-verbally) and presented information to establish trust with patients when providing health promotion. The nurses raised some important points which need to be considered, such as the ability of patients to change their lifestyles, understanding the patient's life and the motives for change and professional credibility. The nurses also stressed that communication skills and keeping up-to-date with the developments within the field were necessary aspects for building trusting relationships. The nurses emphasised the importance of continuity of care (e.g. follow up with patients) and respectful communication with patients. The nurses who participated in the study reported having had ten years' experience in counselling.

Kilonzo and O'Connell (2011) conducted a cross-sectional survey to evaluate the learning needs of patients after percutaneous coronary intervention from the perspective of patients (n=33) and cardiac nurses (n=13) in Ireland. This study used the Nursing Information and Support scale (1=most important and 24=least important) which was developed by Kattainen et al. (2004). They found that there was a positive association between the nurses' responses and patients' responses regarding "Information Adequacy". The nurses emphasised the importance of their role in health education and rated "disease-specific" items as the most important learning need of patients. The nurses ranked secondary prevention as the most important learning priority for their patients in relation to smoking, while they ranked post-discharge care, medication, exercise and usual activities as less important. The patients ranked "individual nursing counselling" as fourth in importance, whereas the nurses ranked it as 17th in importance ($p<0.01$), indicating a dissonance between the nurses' views and patients' needs.

Arnetz et al.'s (2008) study aimed to measure and compare the perceptions of doctors (n=53) and nurses (practical nurses, n=335; RNs, n=303) regarding patient engagement when caring for patients with acute myocardial infarction. Most of the participants (90%) reported that receiving clear information was an important aspect of patient involvement. Approximately 65% of the participants reported that patient involvement in discussions regarding care and treatment was important. The RNs spent significantly more time providing information about different treatment procedures than doctors ($p<0.001$). All the participants believed that the patient was as involved as much as possible during their hospital stay. Approximately 90% of the participants believed that it was very important for the patients to be involved during discharge; the nurses reported this significantly more than the doctors ($p<0.001$). Only 44% of the RNs and

9% of the practical nurses spoke about lifestyle changes “to a very great degree” with the patients before hospital discharge.

- **Nurses’ knowledge of CVD**

Disease knowledge was explored in 11 studies (Wright et al., 2001; Albert et al., 2002; Choi-kwon et al., 2005; Leung et al., 2005; Washburn et al., 2005; Lin et al., 2008; Barnason et al., 2011; Chen et al., 2011; Delaney et al., 2011; Wu et al., 2011; Kalogirou et al., 2013).

Wright et al. (2001) conducted a qualitative study using interviews to explore the patients’ initial assessment with the practice nurse in coronary prevention clinics in the UK. The sample comprised practice nurses (n=6) and patients with heart disease (n=22). All the nurses reported being confident with collecting information about the patients’ condition and discussing symptoms and lifestyle change. However, some of them were less confident in exploring the patients’ concerns, and understanding of their condition, medication and prevention. The nurses reported that they lacked adequate knowledge about medication and heart conditions in general.

An early survey (Albert et al., 2002) of 300 American RNs and LPNs recruited from acute care hospitals, community hospitals, home care and hospice palliative care explored the nurses’ knowledge of heart failure management using a scale of 20 items. The mean knowledge score was 76% (15.2 out of 20; SD± 2). The RNs scored higher knowledge than the LPNs (p=0.004). The nurses who worked in home care scored higher knowledge than those employed in the hospital and palliative care settings (p=0.006). With regards to knowledge across clinical settings, the palliative care nurses scored higher knowledge than the nurses working in critical care, medical-surgical

wards and community settings (p<0.001). The study did not use a non- random sampling technique nor was response-rate reported.

Choi-kwon et al. (2005) conducted a cross-sectional survey to determine what stroke patients want to know and what the medical professionals think that they should know about stroke in South Korea. The study sample were stroke patients (n=50), nurses (n=57) and doctors (n=31) recruited from a hospital setting. The study utilised a structured questionnaire developed for the study. The participants responded to each item on a 5-point rating scale (i.e. 5 represented "the highest need to know" and 1 represented "the lowest need to know") reflecting educational need of a specific aspect of stroke. The participants had different perceptions of what the patients should know about stroke. The nurses, for example, reported significantly higher total rankings for patients' needs to know about stroke education than either the doctors or the patients (p<0.01). The rankings of highest need to know about stroke knowledge was higher in the patients and the nurses than in the doctors (p<0.05). The rankings of rehabilitation and post-stroke problems were higher in the nurses than in the doctors (p<0.05) and were higher in the nurses than in the patients (p<0.05). The study is limited by small sample size and one study site.

Leung et al. (2005) conducted a qualitative study using semi-structured interviews and focus groups with RNs (n=8) and patients (n=16) recruited from four general outpatient clinics in Hong Kong. The study aimed to explore the expectations, attainments and opinions of the participants, the objectives and experiences of nurse facilitators and the changes in nurse–client relationships after a small-group hypertension health education programme. The RNs reported "health knowledge gain" as one of the outcomes achieved through the programme. They also reported that good preparation and

educational presentation skills and techniques were valuable after the programme. The priorities of health concerns, as reported by the RNs, were client empowerment, improved nurse-client relationship and peer support and behaviour changes. This study sample comprised older patients and approximately 90% of the RNs were female.

Washburn et al. (2005) conducted a cross-sectional study to explore the extent of nurses' knowledge related to specific education themes and to determine the need for an intervention to increase nurses' knowledge of heart failure self-care management in the US. The validated Nurses' Knowledge of Heart Failure Education Principles questionnaire (Albert et al., 2002) (20 items) was utilised to ask RNs (n=51) about their self-care knowledge of heart disease. The study suggested that the RNs did not have a high-level of knowledge regarding heart failure self-management principles. The mean HF self-care knowledge score was 14 ± 2 (range = 8-19). The percentage of the participants who answered correctly ranged from 20-100%. The high-scoring questions included content from all five topic themes (diet, fluids or weight, sign or symptoms of worsening condition, medications and exercise). The low-scoring questions included content from four of the five themes (all except exercise). This study did not report the response rate.

Lin et al. (2008) conducted a cross-sectional survey to examine the misconceived and potentially maladaptive beliefs (cardiac misconceptions) about heart disease held by hospital nurses, nursing students and patients with heart disease in Taiwan. The sample comprised nurses working in cardiac and medical settings (RNs, n=61; practical nurse, n=3), nursing students (n=134) and patients (n=238) with heart disease recruited from multiple sites. The mean score was 12.13 out of 20 items (SD2.94) with those who had more scores being more likely to hold a high number of misconceptions. There were no

statistical significant differences between the nurses working in a cardiac ward and those working in medical wards. The nursing students reported fewer cardiac misconceptions than the hospital nurses (p=0.042). The study revealed that the nurses who had worked for 5-10 years were more likely to hold fewer cardiac misconceptions compared with those who had worked between 1-2 years (p=0.019). Similarity, those nurses who had a high level of education were more likely to have fewer cardiac misconceptions compared to those who had a low level of education (p=0.027).

Barnason et al. (2011) conducted a cross-sectional survey to examine outpatient cardiac rehabilitation (CR) and acute care nurses' perception of conducting sexual counselling and education for myocardial infarction (MI) patients in the United States. The study included CR nurses (n=81) and acute care nurses (n=239). The CR nurses reported significantly more concerns than the acute care nurses regarding discussing sexual behaviours with the MI patients (p<0.0001). The acute care nurses had significantly higher levels of confidence and knowledge than the CR nurses to deliver sexual counselling (p<0.0001), however, the acute care nurses were less likely to perform sexual counselling within the practice (p<0.0001) compared to the CR nurses. Generally, the CR nurses reported significantly higher perceived role responsibility and practice related to sexual counselling and also perceived fewer barriers to the provision of sexual counselling for the MI patients, compared to the acute care nurses. The sample were mainly female (96%) and the CR nurses were significantly older (p<0.005) than the acute care nurses.

Chen et al.'s (2011) cross-sectional survey examined Taiwanese RNs' (n=1431) knowledge of hypertension and the factors associated with their level of awareness of guidelines in Taiwan. The mean percentage of correct answers was 68.5%. The poorest

answer rates related to "definition of hypertension" (49.5%), "blood pressure measurements" (58.5%) and "blood pressure and cardiovascular disease" (63.8%). Factors including the RNs' clinical experience ($p<0.001$), work settings ($p<0.001$), positions ($p<0.001$) and level on the career ladder ($p<0.001$) were significantly associated with the RNs' knowledge of hypertension. The knowledge scores were higher in those RNs with 10 to 15 years of clinical experience ($p=0.021$) or 20 years of clinical experience ($p=0.013$). The RNs who were employed in the ICU had higher knowledge scores compared to those who worked in a medical ward ($p=0.018$), surgical ward ($p=0.001$) and the emergency room ($p=0.013$). The RNs who were employed at medical centres reported higher scores than those who worked in the regional ($p<0.001$) or district hospitals ($p<.001$). Additionally, the RNs who received hypertension training reported significantly higher scores than those who did not ($p<0.001$). The majority of the RNs were female (96.8%) and recruited from multiple sites. The response rate was 95.9%.

Delaney et al.'s (2011) cross-sectional survey of 94 American nurses (RNs and LPNs) recruited from four home care agencies to assess the nurses' knowledge of heart failure management developed by Albert et al. (2002). The study used a scale of 20 items and an open-ended question. The mean knowledge score was 78.9% (15.78 out of 20; SD±1.69). The correct responses ranged from 24.5% to 100%. The study did not find any significant differences relating to level of education and work experience. The most frequent topics about which the nurses requested further information were medications (35.1%), diet (31.9%) and fluids or weights (31.9%). Non-random sampling was used and the study recruited small sample size. The response rate was 57.6%.

Wu et al. (2011) conducted a cross-sectional survey to describe the knowledge and attitudes of nurses and personal behaviours related to risk factor reduction of CVD in a sample (n=447) consisting of RNs (n=273), faculty nurses (i.e. who had not finished their study) (n=35) and nursing students (i.e. who finished the final clinical practicum prior to graduation) (n=139) in China. The study showed that more than 70% of the participants in each group recognised most of the risk factors of CVD. The mean percentage of correct answers of the RNs was 84%. Generally, few participants reported that decreased high-density lipoprotein cholesterol and isolated systolic hypertension were risk factors for CVD. Two thirds of the participants could not recognise most of the target goals for risk factor reduction. The RNs had the lowest correct response rate to "how to calculate body mass index (BMI)" compared to others ($p<0.05$). Significantly, more nursing students than other nurses identified "the level of systolic BP that indicated a need to recommend lifestyle modifications to lower it" ($p<0.05$). The faculty nurses had higher rates of correct responses for the item "a lack of physical activity could increase the risk of CVD" ($p<0.05$) and lower rates of correct responses for the item "the criteria for obesity in terms of BMI" compared to others.

Furthermore, the majority of the participants had positive views on the CVD risk reduction and lifestyle modification. The majority of the participants also reported that they had the necessary skills and knowledge to provide health education for CVD prevention and treatment. The proportion of the faculty nurses who reported skills and knowledge was significantly higher than the RNs ($p<0.05$). More RNs than nursing students had positive views on smoking cessation and the need to know one's own blood lipid levels ($p<0.05$). Lack of time, patients' unwillingness to change their lifestyles and lack of doctors' support were the most commonly reported barriers for health education in the prevention and treatment of CVD. Less than half of the

participants reported providing health education to the patients with CVD about exercise. The majority (95%) of the participants did not undertake exercise (i.e. 30 minutes per day) for four days or more per week and over 70% had not undertaken an assessment of their own blood lipid levels within the last five years. More faculty nurses than nursing students reported limiting their saturated fat intake ($p<0.05$) and more RNs than nursing students had their lipid levels checked within the last five years ($p<0.05$).

Kalogirou et al.'s (2013) surveyed 143 Cypriot cardiac nurses (RNs and practical nurses) working in five public hospitals (i.e. cardiac, intensive care units and internal medicine) to assess the knowledge of heart failure management using a scale of 20 items (Albert et al., 2002). The scale was translated from English to Greek and reviewed by an expert panel of four academic nurses. The mean length of clinical experience was 12.3 years (SD 10.54). The mean knowledge score was 67.8% (13.57 out of 20; SD 2.33). The range of scores was 6-19. The nurses who worked in intensive care units scored higher knowledge than those working in cardiac and internal medicine settings ($p=0.0018$).

3.3.3 Patients' perceptions of nurses' role in health promotion relating to CVD

This section evaluates 24 studies which explored the patients' perspectives of the role of nurses in health promotion and CVD (See Table 3.5). Fifteen studies used qualitative approaches, eight studies utilised a cross-sectional survey and one study used a mixed method approach. Additionally, different data collection procedures were utilised including self-report questionnaires (n=9), interviews (n=15), focus groups (n=3) and observations (n=2). The studies originated from 13 different countries, including: Australia (n=1), Hungary (n=1), Hong Kong (n=1), Iran (n=2); Ireland (n=1), Jordan (n=1), the Netherlands (n=2), Norway (n=1), South Korea (n=1), Spain (n=1), Sweden

(n=3), the UK (n=8), and the USA (n=1). Five themes emerged from the papers, namely; "*patients' views of nurses' activities*"; *"constraints to health promotion relating to CVD";* "*patients' knowledge of CVD*"; *"learning needs of patients"* and *"patient autonomy"*.

Table 3.5: Selected patient perception studies for literature review

No.	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
1.	Aminoff and Kjellgren (2001) Sweden	Qualitative study Patients with hypertension (n=20) from different healthcare centres M and F Mean age 62 years (age 38-85 years) Consecutive sampling- multiple sites	Audio-recording of patients' follow-up appointments with their nurses (average length= 18 minutes)	• 50% of consultations were intermediate length, 40% were short and 10% were long. • Most patients were aware of their unhealthy lifestyle and had changed their behaviour. • Some patients were willing to change their lifestyle. • Positive views regarding the nurses' role in health promotion	Moderate • Multiple sites Adequate sample size • Transcripts carried out by two authors independently • No software used to manage the data
2.	Astin et al. (2009) UK	Qualitative study Patients treated with primary angioplasty (n=29) 86% M and 14% F Mean age 60 years (36-83 years) Purposive sampling- one site	Semi-structured interviews (40-90 minutes)	• Majority preferred a verbal, face-to-face approach for health information delivery • Preferred characteristics of health information provision were honest, consistent, easy to understand, written in simple language and non-judgmental information • Computer resources were not generally favoured to information delivery • Preferred informants were varied, but their important considerations were to have accurate, consistent and understandable information • Doctors were preferred as primary informants as nurses had less knowledge • Timing of health information provision depended on "the readiness" of the patients; some preferred immediately, whereas other preferred it towards the end of their 3-day hospital stay.	Strong • Adequate sample size. • Software used to manage the data • Recruitment strategy reported • Two researchers reviewed the data analysis • Saturation was reached

No.	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
3.	Choi-Kwon et al. (2005) South Korea	Cross-sectional survey Patients with stroke (n=50; M and F, Mean age 60 years), RNs (n=57, mean age 27 years, only F) Consecutive sample-one site	Research developed a structured questionnaire	• The average rankings of medical knowledge of patients and nurses was higher than doctors ($p<0.05$) • Nurses reported higher rankings of information needs related to rehabilitation and post-stroke problems than both doctors ($p<0.05$) and patients ($p<0.05$). • Average ranking of information needs related to post-stroke diet management were lower for doctors than for patients or nurses ($p<0.05$). • Younger patients ranked higher for the need to have 'medical knowledge regarding stroke than older patients ($p< 0.01$) • Female patients reported significantly higher rankings than male patients on all items related to post-stroke diet management ($P<0.05$)	Moderate • One site • Adequate sample size • Non-random sampling used • 90% response rate • Validity and reliability of the instrument reported
4.	Eshah (2011) Jordan	Cross-sectional survey Patients with acute coronary syndrome (ACS) (n=150) 72% M and 28% F Mean age 43.6±13 years (age 25-80 years) Convenience sampling- one site	Patient learning needs scale (PLNS)	• The patients reported 27 items out of the 40 items as "very important" and "extremely important • Medication and treatment and activities of daily living were very important learning needs for ACS patients • Higher perception of information needs were among younger patients (<45 years), ($p=0.002$), a high-monthly income (≥500 JD) ($p<0.001$), living in city ($p=0.04$), utilising private transportation means ($p=0.001$), did not watch educational programmes on television ($p=0.034$), did not have diabetes mellitus ($p=0.001$) and do not visit their doctors regularly ($p=0.06$)	Moderate • One site • Adequate sample size • Non-random sampling used • Response rate not reported • Validated and reliability of the instrument reported • 72% male

No.	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
5.	Davidson et al. (2008) Australia	Mixed-methods study Patients with heart disease (n=54) only F age 42 -80 years Purposive sampling-two sites	Four validated questionnaires, telephone interviews (n=8) and un-structured observations	• Patients reported a decrease in the level of anxiety ($p>0.05$). • Patients reported issues including lack of information/ awareness of symptoms before the intervention programme. • Patients reported receiving support and supportive education by joining the nurse-led intervention. • Patients experienced difficulty with how to express themselves to health professionals and their family members.	Weak • Two sites • Small sample size • Selection bias • Study underpowered • 58% response rate • Only Female
6.	Doering et al. (2002) USA	Qualitative study (sub-analysis of large quantitative study) Patients post-cardiac surgery (n=89) mean age 57.6 years, M and F Purposive sampling-one site	Patients interviewed twice after discharge (structured telephone interviews approximately 20 minutes) using one open question	• 26.5% of patients expressed satisfaction with the nursing care during the first interview • 51% of patients expressed satisfaction at the second interview • 19% of patients at first interview and 14% of patients at second interview reported feeling depersonalised as not being cared for (e.g. nurses were too busy for them). • 16% and 24% of patients in the first and second interviews, respectively, reported having expectations that did not match their experiences of having cardiac surgery. • Physical needs unmet including sleep, pain, physical environment reported in both first and second interviews. • 22% of patients at first interview and 19% of patients at second interview reported unmet information needs while in the hospital.	Strong • Adequate sample size • The procedure of data analysis was clearly described • Applicability of the study reported • A panel of two experts reviewed the data analysis • Software used to manage the data

No.	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
7.	Eldh et al. (2006) Sweden	Qualitative study (phenomenology) Patients with heart failure (n=3) Age 53-79 years only M Consecutive sampling- one site	Unstructured observation at the nurse-led outpatient clinic (n=11) and unstructured interviews (n=3) using three open questions	• Patients were satisfied with their participation in the nurse-led programme as their information needs were met • Patients reported taking more responsibility for their health • Patients who did not participate in the nurse-led programme reported lack of information, being controlled and lack of respect.	Moderate • Small sample size • Good internal validity of data analysis reported • Field notes used • No software used to manage the data • Saturation achieved
8.	Farahani et al. (2008) Iran	Qualitative study nurses (n=18) and cardiovascular doctors (n=4), patients with unstable angina or suspected acute myocardial infarction (n=9 M and F, mean age 58.7 years), family members (n=4) Purposive sampling- two sites	Semi-structured interviews	• Doctors considered as highest authoritative person and have a high level of science and knowledge • Patients believed that nurses better than doctors to provide health education at the level of patients' understanding • Patients believed that nurses are able to understand physical, emotional and social characteristics of the patient and the family more than any other individual • Ineffective communication such as patients-health team relationship, the language and ethic variations in patient populations are hindrances of education	Moderate • Inter-rater reliability in data analysis reported • Two members checked analysis to ensure credibility

No.	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
9.	Farahani et al. (2011) Iran	Qualitative study nurses (n=18; mean age 35 years) and doctors specialist in CVD (n=4; M and F), patients with unstable angina or suspected acute myocardial infarction (n=9; M and F, mean age 58.7 years), family members (n=4) Purposive sampling-one site	Semi-structured interviews (10-30 minutes)	• Patients expressed that lack of empathy including non-verbal communication behaviours by nurses and doctors and angry or impatient behaviour toward patients resulted in unwillingness of patients to communicate with their health-care team • Patients declared that lack of respect for privacy and confidentiality was another issue for communication difficulties • Utilisation of medical jargon by health-care providers was another aspect of communication difficulties as it stated by patients • Cultural barriers including discussing sexuality and different language as reported by patients	Moderate • Two sites • Saturation achieved • Thematic analysis used • Codes re-examined for validation
10.	Goodman et al. (2009) UK	Qualitative study Patients waiting for cardiac surgery (n=19) M and F Age 52-76 years Purposive sampling- seven sites	Semi-structured interviews (45-60 minutes) and focus groups (n=10, average 60 minutes)	• Patients did not fully engage with the intervention programme. • The information was not tailored to the individual patient (e.g. a lack of accurate information). • Patients valued the nurse' support when performing physical assessment • Patients perceived misconceptions about the health services.	Moderate • Multiple sites • Adequate sample size • Tape recording and thematic analysis was performed • The procedure for data analysis did not describe

No.	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
11.	Gonzalez et al. (2005) Spain	Cross-sectional study Patients with HF (n=404) (73%) M and F mean age 64.7 years (age 35-86 years) Purposive sampling-one site	Gonzalez et al.'s (2004) questionnaire and a one-to-one interview	• Increase in patients' knowledge about the function of the heart from 28.9% at first visit to 56.4 % after one year ($p<0.001$). • Patients' awareness of three worsening signs or more increased from 66.5% to 86.6% after one year ($p<0.001$). • Medication knowledge increased from 32.9% to 43.6% ($p<0.001$). • Patients' monitoring their weight at least once a week increased from 20.8% to 38.9% after one year ($p<0.001$). • Checking blood pressure at least once a week had increased from 28.5% to 43% after one year ($p<0.001$).	Moderate • One site • Adequate sample size • Recruitment strategy not reported • Validated questionnaire used • Confounders reported including comorbidities • 100% response rate
12.	Hanssen et al. (2005) Norway	Qualitative study Patients with acute myocardial infarction (n=14) 86% M and 14% F Age 42-69 years Consecutive sampling- one site	Focus group interviews (n=3)	• Most patients reported feeling safe and very well when hospitalised • All patients found nurses empathic and highly skilled • Some of patients reported that the information was general and focused on technical matters rather than relevant consequences of the disease after discharge. • All patients regarded general information as important • Some patients reported that they were overwhelmed by receiving too much technical information in response to questions. • At home, most patients reported lack of information about the physical and psychological consequences of the disease, physical activity, and preventive lifestyle changes to reduce CVD risk, implications for future activity and work and medication.	Strong • Adequate sample size • Saturation achieved • Recruitment strategy described • Data analysis clearly described • Clear description of sampling strategy • Software used to manage the data • Notes and tape recording used

No.	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
13.	Harding et al. (2008) UK	Qualitative study Patients with CHF (n=20), M and F Mean age 69 years (age 43-83 years) Nurses (specialists n=5, community n=2) recruited from outpatient clinics and hospital wards, doctors (n=5) Purposive sampling-multiple sites	Semi-structured interviews (n=20, ranged from 20 to 90 minutes)	• Four barriers to effective information provision included difficulties with prognosis, communication challenges such as sensory/memory impairment in older group, curative and technological aspects of patient care and lack of staff time and resources. • Patients reported lack of understanding of the disease, particularly in relation to symptoms. • Patients experienced anxiety due to living with inadequate information about CHF. • Patients recommended receiving comprehensive information.	Strong • Adequate sample size. • Software used to manage the data • Recruitment strategy reported • A second researcher reviewed the data. • Saturation achieved
14.	Hoekstra et al. (2010) Netherlands	Cross-sectional study Patients with heart failure (n=442) and RNs (n=32) M and 70% F Age 68±12 years 30% Random sampling- 17 hospitals	A questionnaire developed for the study	• All the patients reported that the intensity of the programmes was sufficient. • The majority of the patients were satisfied with home visits by RNs • All the patients were satisfied regarding the telephone consultations by RNs	Strong • Multiple sites • Adequate sample size • Random sample • 86% response rate • Validated instrument used • 70% female
15.	Johnson et al. (2010) UK	Cross-sectional study (secondary analysis) Patients with heart disease (n=404) 70% M and 30% F Age 20-84 years Convenience sampling- one site	Questionnaires (three structured questions)	• Recommendations by CR nurses and ward nurses increased the odds of CR attendance ($p<0.0001$ and $p=0.03$, respectively) • 57% of patients asked to attend CR by CR nurses, 76% of patients attended.	Weak • One site • Adequate sample size • Non-random sampling used • 25% response rate • Confounders reported including age • Validity and reliability of the instrument not reported • Missing data reported

No.	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
16.	Jones et al. (2009) UK	Qualitative study (Sub-analysis of RCT study) Patients with heart disease (n=26) M and F Age 45-75 years Purposive sampling-four sites	Five focus group interviews (3 hospital-based CR; 2 home-based CR) (1.5 hour long)	• Most patients were satisfied with the CR programme. • Patients had enjoyed and benefited from CR and reported improvement in their health. • All patients reported that they gained knowledge about heart disease and reported making lifestyle changes. They identified information about medication as useful. • Patients in hospital-based CR appreciated exercising under supervision to reduce their fears about the possible risks of exercise. • Patients were satisfied with the nurse support they received at home • Patients described nurses as very friendly, helpful and knowledgeable • In hospital-based CR, patients reported that the education programme helped them learn more about improving their lifestyle. • Patients suggested a smoking cessation programme for improving the hospital-based CR.	Strong • Multiple sites • Adequate sample size • Recruitment strategy described • Data analysis clearly described • Recruiting strategy reported • Tape recording used • No software used to manage the data
17.	Kilonzo and O'Connell (2011) Ireland	Cross-sectional survey Nurses (n=13) and patients with heart disease (n=33, 78% M and 22% F; 40-89 years) from a hospital setting Convenience sampling-one site	Nursing Information and Support scale (NIS)	• Patients agreed with their nurses and ranked "disease-specific" information as most important and amount of information they had as sufficient • Patients rated "individual nursing counselling" as 4th in importance, while nurses ranked it as 17th ($p<0.01$). • Patients found "individual nursing counselling" was more adequately dealt with compared to their nurses ($p<0.01$). • Patients were more satisfied with the time spent with nurses than the nurses ($p<0.01$).	Moderate • One site • Adequate sample size • Non-random sampling used • Response rate not reported • Validated questionnaire used • Only female

No.	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
18.	Leung et al. (2005) Hong Kong	Qualitative study RNs (n=8) Age 31-40 years M&F Patients with hypertension (n=16) M and F Age 41-71 years Purposive sampling- four sites	Semi-structured interviews	• Outcome of patients' empowerment was partially achieved. • Patients reported health knowledge gain achieved by the HP programme. • Patient participants were generally satisfied with the health promotion. • 50 % of patients reported behaviour change in drug adherence, smoking habit and physical activity.	Moderate • Good internal validity reported • No details of the study context reported • Small sample size • No software to manage the data used • Audio tape recording used
19.	Maclean et al. (2000) UK	Qualitative study Patients with stroke (n=22) M and F Age 38-86 years Extreme case sampling-one site	Semi-structured interviews	• Patients highlighted that rehabilitation had a role in their recovery. • Patients criticised nurses for not being more involved in rehabilitation or for overprotecting them. • Some poorly motivated patients highlighted a lack of understanding of the role of nurses in rehabilitation.	Moderate • Adequate sample size • Recruitment strategy described • Data analysis described • No software used to manage the data
20.	Persson and Friberg (2009) Sweden	Qualitative study Patients with high risk of CVD (n=9) Convenience sampling- two sites	Unstructured interviews	• Patients expressed feeling astonished at the information that they had received and developed an awareness to change after the health conversations. • Patients were enthusiastic about changing their lifestyles • Patients emphasised the need to obtain honest answers from nurses.	Moderate • Small sample size • Taped recording used • No software used to manage the data
21.	Proot et al. (2007) Netherlands	Qualitative study patients with stroke (n=20) Age 50-85 years (mean age 72.4) M and F Consecutive sampling-three sites	Unstructured interviews (3 interviews with each patient)	• Patients' autonomy and self-care increased over time. • Patients experienced a reduction in support and supervision over time. • Patients reported a lack of information during the rehabilitation process. • Patients needed more information about treatment plans and discharge planning.	Strong • Adequate sample size • Validity of data analysis reported (triangulation) • Data analysis clearly described • Tape recording and field notes used • Saturation achieved

No.	Author, year and country	Study design and sample	Data collection & instruments	Key findings	Quality of study
22.	Timmins and Kaliszer (2003) UK	Cross-sectional survey Patients following myocardial infarction (n=27) age 50-69 years, M and F Nurses (n=68) Consecutive sampling-one site	Structured interview and validated questionnaire	• Different responses regarding information needs of MI patients between nurses and patients reported in three items related to physical activity including 'when to resume driving', 'when to resume sexual activity' and 'when to resume work'. • Statistically significant changes in the scores of psychological factors (p=0.006) and medication information (p=0.013) over time. • Patients reported different scores in two categories after discharge, namely, psychological factors (mean increase of 0.35; p=0.006) and medication information (mean decrease 0.28; p=0.013)	Weak • One site • Small sample size • Non-random sampling used • 66% response rate • Validated instrument used • Confounders reported including age and sex reported • Study underpowered
23.	Wright et al. (2001) UK	Qualitative study Patients with heart disease (n=52) M and F Age 35-83 years Practice nurses (n=6) M and F, Age 38-61 years Maximum variation and theoretical sampling-two sites	Semi-structured interviews (an average of one hour) and focus groups (n=6; 3-7 people per group)	• Patients felt more comfortable with nurses than with their doctors and were able to talk, reveal and discuss issues freely. • Patients reported that nurses had sufficient knowledge and skills to perform assessments.	Strong • Adequate sample size • Recruitment strategy described • Data analysis clearly described • Tape recording and software used • Saturation achieved
24.	Zrinyi and Horvath (2003) Hungary	Cross-sectional survey Patients with myocardial infarction (n=112) from a cardiac centre M and F Mean age 56.9 years Random sampling-one site	Self-report questionnaires (Satisfaction with Nursing Care Scale; Patient Reactions Assessment; the Exercise Benefits/ Barriers Scale)	• Patients who smoked less (p=0.02) and exercised more (p=0.014) were more satisfied with nursing care than those who smoked more and exercised less. • Patients who smoked less were more likely to perceive benefits of a healthy lifestyle compared to those who smoked more (p=0.006). • Patients who reported more abilities to initiate contacts or discussions with nursing care were less likely to report consumptions of unhealthy foods (p=0.046) and more likely to engage in regular exercise (p=0.028).	Strong • One site • Adequate sample size • Random sample • 82% response rate • Validated instrument used

- **Patients' views of nurses' activities**

Ten studies explored the views of patients regarding the health promotion delivered by nurses. Eight studies (Aminoff and Kjellgren, 2001; Wright et al., 2001; Doering et al., 2002; Davidson et al., 2008; Jones et al., 2009; Persson and Friberg, 2009; Johnson et al., 2010; Hoekstra et al., 2010) reported positive views regarding nurses' activities, whereas two studies (Maclean et al., 2000; Goodman et al., 2009) revealed contradictory findings.

Maclean et al. (2000) conducted a qualitative study using semi-structured interviews to explore the beliefs of stroke patients (n=22) from the UK who were identified as having "high" or "low" motivation and to investigate the determinants of their motivation. Many patients stated that they had an active role in rehabilitation. Some highly motivated patients criticised the nurses for not being more involved in their rehabilitation or for overprotecting them, whereas some low motivated patients appeared not to understand the role of nurses in the rehabilitation places and articulated frustration that the nurses did not do things for them. The patients reported various factors that affected their beliefs about rehabilitation, including overprotection by family members or nurses, in comparisons to other patients, information from professionals, the need for information and support, mixed messages from healthcare professionals, and a desire to leave hospital. Overall, the patients highlighted that rehabilitation had a positive role in their recovery.

Aminoff and Kjellgren (2001) conducted a qualitative study with a sample of RNs (n=4) and patients with hypertension (n=20) to explore the content and structure of communication between patients and nurses at follow-up appointments concerning hypertension in Sweden. Most of the patients were aware of their unhealthy lifestyles

and had changed their behaviour, and some of them were intended to change their lifestyle. One patient reported that one of the nurses was very skilful in health education about the risk and consequences of non-adherence with prescriptions. Significantly, all the nurses discussed the risks with the patients and the relationship between lifestyle on the one hand and cardiovascular diseases and high blood pressure on the other hand. The patients recognised that one difficulty with lifestyle changes was not being motivated. Likewise, Wright et al. (2001) conducted a qualitative study using interviews to explore the views of nurses (n=6) and patients with heart disease (n=22) regarding the nursing-led interventions in the UK. The patients felt more comfortable with their nurses than with their doctors and reported being more able to talk, reveal and discuss issues freely. The patients reported that their nurses had sufficient knowledge and skills to perform assessments.

Doering et al. (2002) examined the perceptions of patients (n=89) on the quality of nursing and medical care in their hospital after cardiac surgery in the USA. During the first interview (one week after hospitalisation), 26.5% of the patients expressed satisfaction with their nursing care and 51% of the patients expressed satisfaction at the second interview (six week after hospitalisation). However, about one fifth of the patients (19%) experienced feeling depersonalised, as the nurses were too busy when delivering their care. The study was conducted on one site and not all subjects responded to the open-ended questions. Davidson et al. (2008) used questionnaires, interviews and observation to pilot the acceptability and feasibility of a CR programme (nurse-led intervention) tailored to the needs of women with heart disease. The study included women with heart disease (n=54) recruited from two acute hospital settings in Australia. The study reported a decrease in self-reported depression, anxiety and stress scores post-intervention but the changes were not statistically significant. The patients

reported issues including lack of information/awareness of symptoms and difficulty in expressing themselves to health professionals and family members. The patients reported receiving support and supportive education by joining the nurse-led intervention.

Goodman et al. (2009) conducted a qualitative study using semi-structured interviews and focus groups to explore the patients' experience (n=19) of participating in a nurse-led intervention following heart surgery. The patients were recruited three months after discharge from seven hospitals in the UK. The patients reported that they did not fully engage with the intervention programme as they misunderstood the aims of the programme. The patients also stated that the information which they received from the nurses was not tailored to their individual needs (e.g. specificity to their needs). Nevertheless, the patients valued the support which they received from the nurses, for example, medical advice about physical symptoms.

Another qualitative study conducted by Jones et al. (2009) used focus group interviews to compare the views of patients (n=26) who had completed a home or hospital-based CR programme and to explore the benefits and problems of each programme. The study utilised five focus group interviews (3 hospital-based CR and 2 home-based CR) lasting 1.5 hours. The study sample was recruited from four hospitals. Most of the patients in both the hospital and the home groups reported that they were very satisfied with the CR programme. The patients had enjoyed and benefited from CR and felt improvements in their health and regaining the confidence to return to their normal activities. All of the patients reported that they had learned more about heart disease and reported making lifestyle changes. The patients identified the information about medication as useful. The patients who had participated in the hospital-based CR appreciated exercising under

supervision to reduce their fears about the possible risks of exercise. The patients who had participated in the home-based CR were satisfied about the nurse support that they received. They described the nurses as very friendly, easy to talk to, helpful and knowledgeable. The patients who had attended the hospital-based CR reported that the education programme helped them to learn more about improving their lifestyle. They suggested including a smoking cessation programme to improve the hospital-based CR. The study recruited an adequate sample size from multiple sites. It also provided sufficient detail about the study method and recruitment strategy.

Persson and Friberg (2009) conducted a phenomenological study of health conversations using open-ended interviews from the perspective of patients (n=9) who were at risk of developing CVD in Sweden. The patients expressed feeling satisfaction from the information that they had received from the nurses and developed an awareness allowing them to change their lifestyles. The patients were enthusiastic about changing their lifestyles. One of the issues that the patients raised was the lack of honest answers from the nurses. Although this study recruited a small sample size, the details of the study method were clearly described and the participants were recruited from two communities.

A cross-sectional survey of 404 patients was conducted by Johnson et al. (2010) to determine which healthcare provider recommendations were independently associated with cardiac rehabilitation attendance in the UK. About 57% of the CR nurses advised the patients to attend CR and 78% attended. This study showed that the recommendations of the CR nurses and the ward nurses increased the odds of CR attendance ($p<0.0001$ and $p=0.03$, respectively). This study was limited with high missing data.

Hoekstra et al. (2010) conducted a cross-sectional survey to investigate the perceptions of patients with heart failure (n=442) and RNs (n=32) regarding disease management programmes (i.e. basic and intensive nurse-led interventions) in 17 hospitals in the Netherlands. Nearly all of the patients reported that the intensity of the two intervention programmes was sufficient and the majority were satisfied with their home visits by the RNs. All of the patients were satisfied regarding the telephone consultations conducted by the RNs (including 96% basic interventions; and 97% intensive interventions).

- **Constraints to health promotion relating to CVD**

Five studies focused on the barriers to health promotion by nurses relating to CVD (Zrinyi and Horvath, 2003; Farahani et al., 2008; Harding et al., 2008; Farahani et al., 2011). Zrinyi and Horvath (2003) conducted a cross-sectional survey to investigate the perceptions of patients regarding their satisfaction with nursing care, nurse-patient interactions, and the benefits and barriers to implementing a healthy lifestyle. The study reported that the patients' satisfaction with nursing care and nurse-patient interactions were significantly associated with the perceived benefits and barriers to implementing a healthy lifestyle. Those patients who smoked less (p=0.02) and exercised more (p=0.014) were more satisfied with their nursing care compared to those who smoked more and exercised less. Similarly, the patients who smoked less were more likely to perceive the benefits of a healthy lifestyle compared to those who smoked more (p=0.006). Additionally, those who reported more abilities to initiate contacts or discussions with the nurses were less likely to report the consumption of unhealthy foods (p=0.046) and more likely to engage in regular exercise (p=0.028).

Farahani et al. (2008) conducted a qualitative study using semi-structured interviews to identify the key issues relating to cultural factors influencing education of CVD patients

in Iran. The study sample consisted of nurses (n=18), cardiovascular doctors (n=4), patients (n=9) and family members (n=4). The study revealed different opinions regarding who should undertake health education to CVD patients. The authors argued that the patients perceived nurses as technical professionals who perform dressing of wounds and injections. However, some patients believed that the nurses have the ability to provide better health education than the doctors at the level of patients' understanding since there was a class gap between doctors and patients.

Similarly, Harding et al. (2008) conducted a qualitative study using semi-structured interviews with a sample of patients with CHF (n=20), nurses (specialists n=5, community nurses n=2) and doctors (n=5) to generate guidance for appropriate information provision to CHF patients and their families. The patients reported a lack of understanding of heart disease, particularly in relation to symptoms. The patients experienced anxiety due to living with inadequate information about CHF. The study revealed four barriers to effective information provision, including difficulties identifying prognostication, communication challenges such as sensory/memory impairments in this elderly group, curative and technological aspects of patient care and lack of staff time and resources. The patients recommended more comprehensible information provision. The study was limited to one site and had confounders including age and co-morbidities.

Farahani et al. (2011) conducted a qualitative study using semi-structured interviews to explore communication barriers from the perspectives of nurses (n=18), cardiovascular doctors (n=4), patients with unstable angina or suspected acute myocardial infarction (n=9) and their family members (n=4) in Iran. The patients reported experiencing communication difficulties with the nurses and doctors. They added that the use of

medical terminology by health-care professionals was a barrier to effective communication. In addition, the cultural issues including discussing sexual side-effects and the different languages of the patients and healthcare professionals were further communication problems.

- **Patients knowledge of CVD**

Three studies (Choi-kwon et al., 2005; Gonzalez et al., 2005; Leung et al., 2005) explored the CVD knowledge of patients following the nurse-led intervention. Gonzalez et al. (2005) surveyed patients (n=404) with heart failure (HF) recruited from an outpatient clinic in Spain. The study aimed to evaluate what had been achieved by the nurse-led rehabilitation programme after 12 months. The study reported an increase in the patients' knowledge about the performance of the heart from 28.9% at the first visit to 56.4 % after one year ($p<0.001$). Additionally, the patients' awareness of the three worsening signs or more increased from 66.5% to 86.6% after one year ($p<0.001$). Their knowledge of the medications had increased from 32.9% to 43.6% after one year ($p<0.001$). Patients monitoring their weights at least once a week had increased from 20.8% to 38.9% after one year ($p<0.001$). Similarly, another cross-sectional survey was conducted by Choi-kwon et al. (2005) to explore what stroke patients wanted to know and what medical professionals thought they should know about stroke in South Korea. The study sample comprised stroke patients (n=50), RNs (n=57) and doctors (n=31) recruited from one hospital. Data were collected using a structured questionnaire (a 5-point rating scale; 5 represented "the highest need to know" and 1 represented "the lowest need to know"). This study compared heart disease knowledge across the three groups (nurse, doctor and patients). Generally, the rankings were higher in the nurses than in the doctors ($p<0.05$) and were higher in the nurses than in the patients ($p<0.05$).

The average ranking for ‘stress management’ was higher in the patients than in the doctors ($p<0.05$). Notably, the younger patients reported different responses than the older patients. For instance, the younger patients ranked significantly higher than the older patients in ‘disease knowledge regarding stroke’ ($p<0.01$). The rankings of the disease knowledge regarding stroke was higher in the patients and the nurses than in the doctors ($p<.05$). The rankings of post-stroke problems were higher in the nurses than in the doctors ($p<0.05$) and were higher in the nurses than in the patients ($p<0.05$). The study was limited by small sample size and one study site.

Leung et al. (2005) conducted a qualitative study using semi-structured interviews and focus groups with RNs (n=8) and patients (n=16) recruited from four general outpatient clinics in Hong Kong. The study aimed to explore the expectations, attainments and opinions of the patients within a small-group hypertension health education programme (nurse-led intervention); the experience of nurse facilitators of running the programme; and the relationship between the nurses’ facilitators and patients. The patients reported health knowledge gain as one of the outcomes achieved through the programme. The patients’ expectations included reducing body weight and improving their health, health education and health outcomes. The patients were generally satisfied with the health promotion delivered by the RNs. Almost all the patients reported that the health education outcomes of knowledge gain and self-monitoring skills were achieved. The outcome of patients’ empowerment was partially achieved as the patients stressed that having knowledge and skills following the programme helped to control their illness and feelings of anxiety. Half of the patients reported behaviour changes in terms of drug adherence, smoking habit and physical activity. This study sample comprised older patients and 90% of the nurses were female.

- **Learning needs of patients**

Seven studies (Doering et al., 2002; Timmins and Kaliszer, 2003; Hanssen et al., 2005; Eldh et al., 2006; Astin et al., 2009; Eshah, 2011; Kilonzo and O'Connell 2011) investigated the unmet information needs of patients. Doering et al.'s (2002) study revealed unmet information needs and physical needs with 22% and 19% of the patients reporting these issues at the first interview and at the second interview, respectively. Timmins and Kaliszer (2003) conducted a cross-sectional study using questionnaires and structured interviews to explore the information needs of patients with myocardial infarction (n=27) and to compare their views with RNs (n=68). The study reported different responses between the RNs and the patients regarding three items of physical activity, namely, when to resume driving, when to resume sexual activity and when to resume work. There was a statistically significant change in the scores of psychological factors (p=0.006) and medication information (p=0.013) between the RNs and the patients. The study was limited by small sample size.

Hanssen et al. (2005) conducted a qualitative study using focus group interviews to explore the information needs of in-patients with acute myocardial infarction (AMI) (n=14) and their preferences for follow-up contact after discharge from a hospital in Norway. Most of the patients reported feeling safe and very well when hospitalised. All the patients reported that the nurses were empathic and highly skilled. Some of the patients reported that the information was general and focused on technical matters rather than the relevant consequences of the disease. All the patients regarded the general information as important. Some of them highlighted that it was necessary to take an active role in learning about their health by asking questions, joining the educational sessions and watching video on health promotion rather than waiting to be

told everything. Additionally, they were overwhelmed by receiving too much technical information in response to their questions. At home, most of the patients reported a lack of information about the physical and psychological consequences of the disease, physical activity, and preventive lifestyle changes to reduce CVD risk, implications for future activities and work and the medications. Although the study was conducted in one site, it recruited an adequate sample size and the study method was sufficiently described.

Eldh et al. (2006) conducted a qualitative study using observations (n=11) and interviews (n=5) to explore patient participation and non-participation in a nurse-led clinic for CHD from the perspectives of patients (n=3) and specialist nurses in cardiovascular nursing (n=2) in Sweden. The patients reported positive feelings for participation as their needs, wishes and decisions were valued. They experienced taking responsibility for their health. Those patients who did not attend the clinics reported experiencing a lack of information, being controlled and a lack of respect.

Astin et al. (2009) conducted a qualitative study using semi-structured interviews to explore the information needs of patients (n=29) treated with primary angioplasty for heart attack in the UK. The majority of the participants preferred a verbal, face-to-face approach for health information delivery, supplemented by written information as a backup. This was perceived as a more personal approach and gave the chance for some participants to gauge truthfulness of the information being given. The participants valued other methods such as the use of videos and models of the heart to support learning. In terms of the provision of health information, the participants valued honest, consistent, easy to understand, written in simple language and non-judgmental information. They pointed out some potential barriers for effective health information

delivery including emotional responses to a life-threatening event and the pace of service delivery. The participants found that viewing images of their heart before and after an angiogram had a powerful impact because it was individualised and meaningful. Computer resources were not generally favoured to deliver information, in particular for the older patients, and because it was not a format accessible for the low socio-economic patients. The participants emphasised the importance of the content of information provided including: living with and managing the risk of recurrence; negotiating lifestyle changes and physical limits; and heart muscle damage and its implications. The responses of participants to their preferred informants varied but important considerations were to have accurate, consistent and understandable information. Some of the participants preferred doctors as primary informants as nurses were perceived to have less knowledge and that the knowledge that they did have was provided by doctors. Timing of health information provision depended on "the readiness" of the patients. Some patients preferred health information immediately, whereas others preferred it towards the end of the third day of their hospital stay.

Eshah (2011) conducted a cross-sectional survey to identify and prioritise the actual learning needs of acute coronary syndrome patients (n=150) and explore the differences in learning needs on the basis of socio-demographic and clinical variables in Jordan. The patients perceived 27 out of the 40 items as "very important" and "extremely important". These 27 items were under two categories, namely; medication and treatment and activities of daily living. The study revealed that the perceived learning needs of the younger patients (<45 years) were significantly higher than the older patients ($p=0.002$). Higher perception of needs was also reported among the patients who had a high-monthly income (≥500 JD) ($p<0.001$), lived in the city ($p=0.04$), utilised private transportations ($p=0.001$), did not watch educational programmes on

television (p=0.034), did not have diabetes mellitus (p=0.001) and did not visit their doctors regularly (p=0.06).

Kilonzo and O'Connell (2011) conducted a cross-sectional survey to evaluate the learning needs of patients after a percutaneous coronary intervention from the perspective of patients (n=33) and cardiac nurses (n=13) in Ireland. The study used a Nursing Information and Support scale (1= most important and 24= least important) (Kattainen et al., 2004). The patients ranked "disease-specific" information as the most important and reported that the amount of information they received was sufficient. The patients ranked "individual nursing counselling" as 4th in importance, while nurses ranked it as 17th ($p<0.01$). The patients were more likely to respond that "individual nursing counselling" was more adequately dealt with compared to their nurses ($p<0.01$).

- **Patient autonomy**

One study (Proot et al., 2007) explored patients' autonomy post-cardiac rehabilitation and found it increased. Proot et al. (2007) conducted a qualitative study to explore stroke patients' experiences of health professionals' approach towards autonomy in the full rehabilitation process (on admission, during rehabilitation and at discharge) in the Netherlands. Open-ended interviews were conducted with stroke patients (n=22). On admission, most of the patients reported experiencing a decline in their level of self-care compared with that pre-stroke. They had, however, more autonomy in the nursing home than in the hospital. Additionally, the patients experienced nurses' support for self-care as facilitating autonomy. During rehabilitation, the patients perceived receiving less support than on admission and self-care increased as a result of improving abilities and greater confidence. The patients reported taking an active role in rehabilitation and demonstrated growing independence and self-determination. The nurses provided the

patients with instructions and assessed their needs for aids and adaptations to use at home which facilitated self-care. Although the patients valued paternalism regarding treatment decisions, they reported needing more information about their treatment plans and discharge planning. At discharge, both the patients' autonomy and confidence had increased. The study revealed that before discharge, instructions and supervisions were performed to increase autonomy as patients were highly motivated. Furthermore, training activities were carried out under supervision to maintain independence.

3.3.4 Summary

A large number of published studies were identified from a search of the literature. The literature review was, therefore, divided into two elements: one focused on the nurse-led interventions using RCTs to investigate the effectiveness of nurse-led interventions in patients with CVD; and the second element was related to the nurse's role in health promotion relating to CVD from the perspective of nurses and patients. With regard to the effectiveness of nurse-led interventions using RCTs, most of the nurse-led interventions had short follow-up periods so that the effect of the interventions in the longer term is unknown which is a major gap in the evidence base. Only one high quality RCT (Murchie et al. 2004), conducted in the UK, investigated the effect of a nurse-led intervention (face to face counselling at secondary prevention clinics, 2-6 monthly follow-up) on depression and quality of life of patients with CVD and demonstrated significant improvements in the quality of life of the patients after a 4-year follow-up. Additionally, the selected RCTs measured trial outcomes in different ways and used different measurement tools making the synthesis of the results across the selected studies challenging. Overall, nurse-led interventions have been found to have a positive effects on the clinical outcomes (i.e. cholesterol level, exercise

performance, weight management, smoking cessation and blood pressure) and self-report disease-related outcomes (i.e. disease knowledge, self-efficacy and the level of adherence); and psychosocial outcomes (i.e. quality of life, anxiety and psychosocial adjustments) of patients with CVD. However, the literature review indicated mixed findings regarding the effect of nurse-led interventions on smoking cessation and self-care management behaviours. It is also worth noting that the reviewed RCTs were conducted in different countries (e.g. the UK and USA) with no studies conducted in the Middle East.

The literature review included different modes of nurse-led interventions including telephone delivered, face-to-face and remote interventions. The face-to-face and telephone call interventions appeared to yield greater improvement in general and specific health outcomes than remote interventions. Jaarsma et al. (2000) reported positive outcomes (disease symptoms, psychosocial adjustments, quality of life and self-care management behaviour) after a face-to-face and telephone call nurse intervention (four face-to-face sessions at the hospital and one at the patient's home as well as one telephone call) at nine-month follow-up**.**

Regarding the nurses' perceptions of their role and activities in health promotion relating to CVD, some nurses reported positive views regarding their role and perceived themselves to have role legitimacy as health promoters within both community and hospital settings. Nurses, for example, perceived themselves as independent health professionals who had different responsibilities than other healthcare professionals (e.g. doctors) (Barreca and Wilkins, 2008). However, the literature suggested, in some instances, that nurses do not have time to undertake health promotion relating to CVD due to a focus on the acute care needs of patients with heart disease (Harding et al.,

2008; Wang et al., 2009; Hernandez and Anderson 2012). Additionally, nurses in one study (Halcomb et al., 2008) reported a lack of doctors' support and little nurse autonomy which led them to feel uncertain about their role legitimacy in health promotion relating to CVD. Constraints to the role of nurses in health promotion relating to CVD from the perspective of nurses included the lack of staff (Wang et al., 2009), cultural or language barriers and the patients' unwillingness to change their lifestyles (Arnetz et al., 2008) and the lack of knowledge and skills (Harding et al., 2008).

However, the literature suggested that nurses have the knowledge and the skills to undertake health promotion relating to CVD although the levels of CVD knowledge were influenced by factors including the length of nurses' experience, fields of clinical practice, healthcare facility and health promotion training (Chen et al., 2011). But no previous study has been conducted in the Middle East, including Jordan, to explore the views of nurses regarding their role in health promotion relating to CVD or the qualified nurses' knowledge of CVD.

In terms of patients' perceptions, the literature indicated that patients hold positive views regarding the nurses' role and activities in health promotion relating to CVD. Patients in Jones et al.'s (2009) British study, for example, were satisfied about the role of nurses in health promotion after home and hospital-based CR and reported learning more about heart disease and making lifestyle changes**.** The literature also suggested that verbal and face-to-face approach supplemented with written information was an effective health information delivery format (Astin et al., 2009**).** However, those studies which reported positive views of patients were mainly conducted in more developed countries such as the UK which have different lifestyles and cultures compared to

Jordan. Regarding the learning needs of patients with heart disease in Jordan, Eshah's (2011) study reported that medication regime and activities of daily living were the most important learning needs of patients, with younger patients with high monthly incomes living in the city expressing the highest learning needs. The literature indicated some constraints to the role of nurses in health promotion relating to CVD from the perspective of patients including cultural barriers and inadequate communication between nurses and patients.

The limited evidence base suggests that health promotion is mainly within the doctors' domain in Jordan (Shuriquie 2006). There is, therefore, limited evidence regarding the RNs' role legitimacy in health promotion relating to CVD in Jordan. Clarification of this role legitimacy is essential, particularly with the increased prevalence of chronic diseases including CVD, and in particular from the perspectives of RNs, doctors and patients. To address this identified gap in the literature and in practice, this study aims to explore the RNs' role legitimacy in health promotion relating to CVD in Amman, Jordan, from the perspectives of RNs, doctors and patients, with specific focus on role legitimacy.

3.4 Conceptual framework

Conceptual frameworks are developed to serve as a way of identifying, labelling and classifying phenomena, which are essential for the discipline of nursing (Kitson et al., 1998). Shaw et al. (1978) developed a conceptual framework on the role of primary healthcare workers when helping clients with problematic alcohol use. Shaw et al. (1978) proposed that role adequacy, role legitimacy and role support are important aspects for role security in practice and therapeutic commitment. Role adequacy is linked with the level of practical knowledge and skills, role legitimacy is related to

legitimate areas or boundaries of practice, and role support is related to support for involvement in areas of practice from a range of levels and resources. Shaw et al. (1978) stressed that a deficiency in one or more of the three role aspects will cause role insecurity and lack of therapeutic commitment from employees.

Machin and Stevenson (1997) adapted Shaw et al.'s (1978) framework to explore the role of psychiatric nurses in practice. They suggested that the three role aspects (role adequacy, role legitimacy and role support) can be considered from both "formalised" and "non-formalised" dimensions (See Table 3.6). In addition, the three role aspects can occur in varying degrees and optimum role function can develop when the three areas are satisfactorily covered.

Table 3.6: Conceptual framework-nursing role (Machin and Stevenson, 1997, adapted from Shaw et al., 1978).

Explanations of role engagement	**Interpretations**	**Formalised**	**Non-formalised**
Role Adequacy	Minimum expectancies regarding key competencies that can be measured	Approved pre-post-registration (programmes and qualifications)	Skills development from experience
Role Legitimacy	Appropriateness of practice areas and scope of professional practice	Recognising legitimate areas of practice by professional bodies	"Greyer" areas of practice role-overlap, informal understanding and negotiation between individual groups regarding areas of legitimacy
Role Support	Supports from different levels (Macro and Micro levels)	Agreements and policies	Supports between individuals at an interpersonal levels

The role legitimacy of RNs in health promotion in relation to CVD is important and needs to be addressed in Jordan since this role is not clearly defined, as was evident in Shuriquie's (2006) earlier study which found an emphasis upon the physical needs of patients by the RNs and the practical nurses, with the psychosocial and communication

activities being assigned to the doctor by both the patients and the doctors. Zahran (2010) has also noted that nursing practice in Jordan is characterised by a lack of clarity in relation to the role of RNs due to the absence of job descriptions. An absence of regulation and a scope of practice framework have been also recognised in Jordan (JNC, 2011b).

The focus of this study is, therefore, to explore the role legitimacy of RNs in health promotion in relation to CVD while focusing on role legitimacy as interpreted by Machin and Stevenson (1997). This framework has been successfully used to clarify the role of nurses practicing in the Middle East including Saudi Arabia (Aldossary, 2010) and Jordan (Shuriquie, 2006). Machin and Stevenson (1997) have emphasised that role legitimacy is important within a given discipline including professional levels (nurses) and from outside the specific discipline (doctors and patients). Thus, this study sought to explore the role legitimacy of RNs in health promotion in relation to CVD from the perspectives of RNs, doctors and patients.

Chapter Four

Methods

4.1 Introduction

The previous chapters have summarised the context and the literature relating to the activities of nurses and perceptions of both nurses and patients regarding health promotion relating to CVD by nurses. This chapter presents the aim and objectives of the current study and describes the study design, the study sites and settings, the study population and target sample, the sampling strategy (at the organisational and the individual levels), the study instrument, refinement, translation and piloting of the study instrument, rigor of the study (reliability and validity), ethical considerations, access to study sample and data collection procedure and data analysis.

4.2 Aim and objectives of the study

4.2.1 Aim

This study aimed to explore the role legitimacy of RNs in health promotion relating to CVD from the perspective of RNs, doctors and patients in Jordan.

4.2.2 Objectives

The research objectives were:

a) To describe the role legitimacy of RNs in health promotion relating to CVD from the views of RNs, doctors and patients within the three Jordanian health sectors (i.e. public sector, private sector and RMS).

b) To describe RNs' knowledge of CVD.

c) To describe the personal health behaviours of RNs, doctors and patients in Jordan.

d) To compare the views of RNs, doctors and patients regarding the role legitimacy of RNs in health promotion relating to CVD between the three Jordanian healthcare sectors (i.e. public sector, private sector and RMS).

e) To compare views regarding health promotion relating to CVD, reported knowledge of CVD and personal health behaviours, in order to build an explanatory model of the RNs' role legitimacy in health promotion relating to CVD.

4.3 Study design

This study used a correlational cross-sectional survey design to examine the role legitimacy of RNs in health promotion relating to CVD in Jordan. A cross-sectional survey was the appropriate design to meet the study aim and objectives because it enabled the collection of a broad range of views regarding the RNs' role legitimacy in health promotion relating to CVD from three sample groups (i.e. RNs, doctors and patients) across the public, private and RMS healthcare sectors at a single point in time.

McColl et al. (2001) have recommended the use of a cross-sectional survey design to gather data about behaviours, knowledge and views, and additionally Brink and Wood (1998) have recommended the cross-sectional survey design where there is little existing knowledge/theory of the topic under investigation. This design was, therefore, chosen as there is no existing knowledge regarding the RNs' role legitimacy in health promotion relating to CVD in Jordan.

4.4 Study sites and settings

This study was conducted in Amman, the capital city of Jordan. Amman has the largest population in Jordan, 2,842,629 people in 2010 (MoH, 2013b); and has the largest number of general hospitals and primary healthcare centres (MoH, 2013b). The public sector comprises three general public hospitals and 63 primary healthcare centres in Amman. The private sector comprises 31 general hospitals, while the RMS comprises two general hospitals and one cardiac institute in Amman. Patients from different cities and rural areas in Jordan may be directly admitted to these hospitals (Shuriquie, 2006). RNs and doctors working in both the public and private sectors in Amman are recruited from across Jordan which increased the representativeness of the RNs and doctors to match the study population. The study sites included the only cardiac institute in Jordan which provides comprehensive services to all of the Jordanian population (Jordanian Royal Medical Services, 2013). The study settings were acute care (i.e. medical and surgical wards) and out-patient departments of general hospitals (i.e. public sector, private sector and RMS), primary healthcare centres within the public sector and one cardiac institute within the RMS.

4.5 Study population and target sample

The study population comprised RNs, doctors and patients in Jordan. The target population were RNs and doctors who worked in general hospitals (i.e. public sector, private sector or RMS), primary healthcare centres or in the cardiac institute in Amman; and patients admitted to the general hospitals (i.e. public sector, private sector or RMS), attended out-patient departments within general hospitals (i.e. public sector, private sector or RMS), attended the cardiac institute or attended a primary healthcare centre in

Amman, Jordan. Table 4.1 presents the inclusion and exclusion criteria of the target population

Table 4.1: Inclusion and exclusion criteria of the target population

Inclusion	Exclusion
• RNs (male and female) who worked in: acute care/out-patient departments within general hospitals (public, private or RMS); one of primary healthcare centres; or worked in the cardiac institute in Amman. • General, resident and specialist doctors (male and female) who worked in: acute care/ out-patient departments within general hospitals (public, private or RMS), in one of primary healthcare centres or in the cardiac institute in Amman. • Patients (male and female) aged 18 years or over admitted to acute care/out-patient departments within general hospitals (public, private or RMS), who attended primary healthcare centre or the cardiac institute in Amman.	• RNs working in emergency, paediatric and ICU settings. • RNs who were not able to speak or write in Arabic. • Doctors working in emergency and paediatric settings. • Doctors who were not able to speak or write in Arabic.

4.6 Sampling strategy

Cluster random sampling was utilized to select the study settings. Details of the sampling strategy and achieved recruitment are presented in Figure 4.1. This study comprised five sample groups recruited from the public sector, the private sector, the RMS, the cardiac institute within the RMS and primary healthcare centres within the public sector (See Figure 4.1). The target sample size was calculated with reference to previous research conducted in Jordan because there were no data regarding the population mean and standard deviation (SD). The required number of participants was

calculated taking into account the number of potential non-respondents (Kirkwood and Sterne, 2003). The target sample for the current study was 1350 participants (i.e. 450 RNs, 450 doctors and 450 patients) from the general hospitals, 300 participants (i.e. 100 RNs, 100 doctors and 100 patients) from the primary healthcare centres and 300 participants (i.e. 100 RNs, 100 doctors and 100 patients) from the cardiac institute (See Figure 4.1). The sampling strategy was undertaken at two levels; organisational and individual levels.

4.6.1 Organisational level

All the public and RMS hospitals located in Amman were included in the study, and cluster random sampling was undertaken for private hospitals and primary healthcare centres.

- **Public and RMS hospitals**

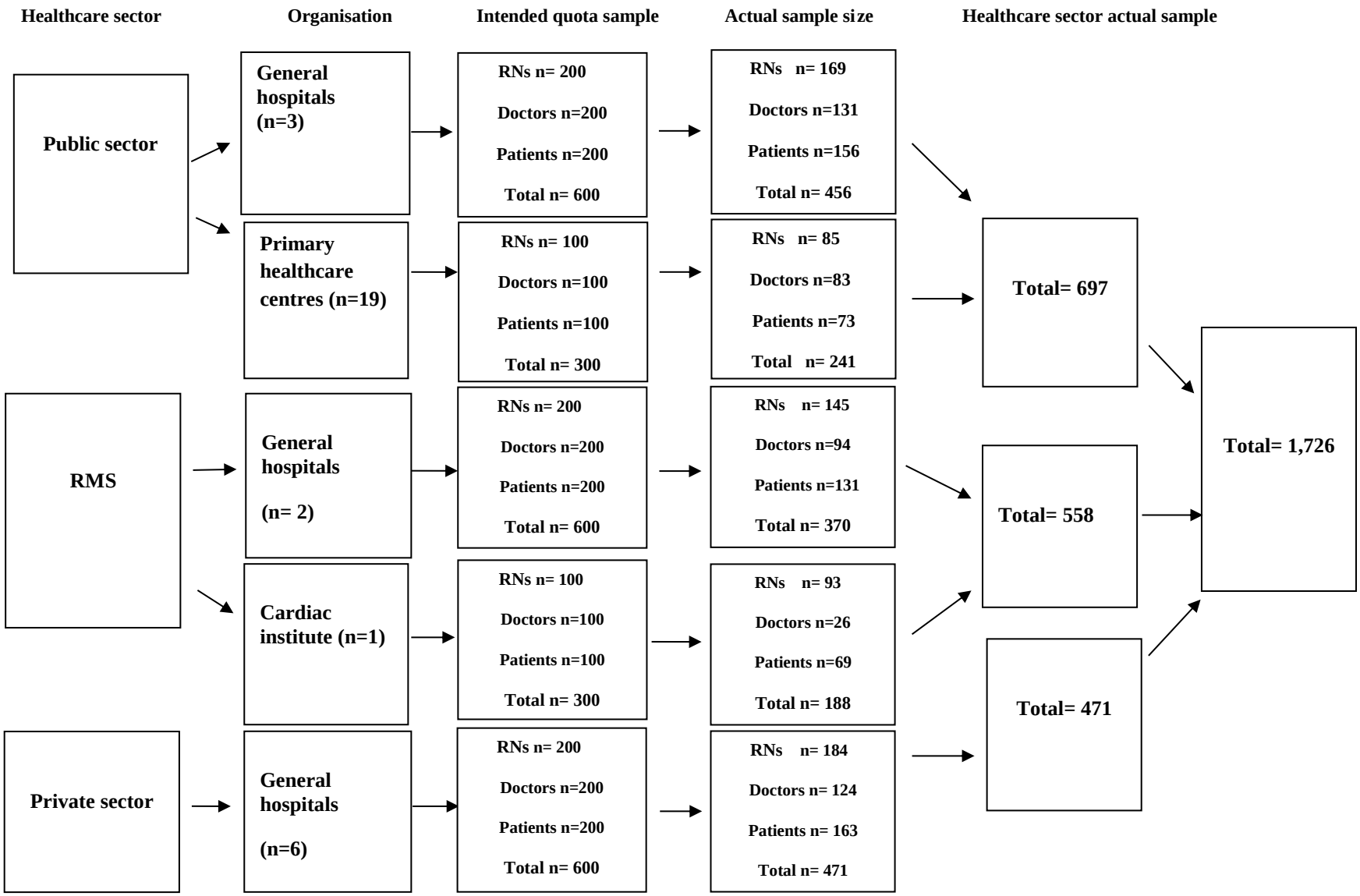
All the three public hospitals, the two RMS hospitals and the cardiac institute located in Amman, were included in this study.

- **Private hospitals and primary healthcare centres**

The private sector comprises 31 general hospitals and there are 63 primary healthcare centres within the public sector in Amman, which is a number large enough for randomisation. Cluster random sampling was undertaken to select the private hospitals and primary healthcare centres as recommended by Abramson and Abramson (2008). This sampling technique enabled access to large samples by dividing the population into clusters with randomly sampled clusters being selected (Moule and Goodman, 2009). Computer random sampling was utilised to include the required number of primary healthcare centres (n=19) within the public sector and general hospitals (n=6) from the

private sector. The size of private hospitals varied (number of beds ranged from 15 beds to 275 beds), therefore, the hospitals were divided into two lists according to the hospital size prior to cluster random sampling. The hospitals with more than 150 beds were considered large, while the hospitals with fewer than 150 beds were considered small. 19 primary healthcare centres were randomly selected from the public sector, whereas two large hospitals and four small hospitals were selected from the private sector in the study (See Figure 4.1).

Figure 4.1: Sampling strategy and achieved recruitment



4.6.2 Individual level

A quota sampling technique was used to select the study sample of participants from the included study sites. This sampling technique was chosen to achieve an appropriate sample representation from each healthcare sector to match the target population in Amman. The quota sampling method is a convenient method to assure the inclusion of adequate numbers of participants in each stratum for the planned statistical analysis (LoBiondo-Wood and Haber, 2010), and to reduce the probability of sampling errors and the potential for bias.

Within the general hospitals, the target sample included 150 participants in each sample group (i.e. RNs, doctors and patients). A sample of 1350 participants from the general hospitals was considered adequate to provide an indication of a range of views from these hospitals. Given the risk of non-response, the researcher assumed a response rate of 70%, as reported in an earlier study conducted in Jordan (Shuriquie, 2006). It was, therefore, proposed that by approaching 200 participants for each sample group (RNs, doctors and patients) in each sector, a total of 1800 participants would be sufficient (See Figure 4.1). Within the primary healthcare centres and the cardiac institute, 100 participants from each sample group (i.e. RNs, doctors and patients) from primary healthcare centres were deemed appropriate, with the same approach being adopted for the cardiac institute to provide a range of views regarding the RNs' role legitimacy in health promotion relating to CVD within these settings. To increase the representativeness of the study sample, proportionate quota sampling was used for each healthcare sector.

- **Private sector**

In the private sector, one large general hospital was randomly selected from the first list (large hospitals size) and then two small general hospitals were randomly selected from the second list (small hospitals size). This resulted in 50% of each sample group drawn from the large private hospitals, and 50% of each sample group from the small private hospitals. As the required number of participants from the three hospitals did not reach the desired sample size, another large hospital and two small hospitals were randomly selected from the lists of private hospitals. The total number of participants included from the six private hospitals was 471 participants (184 RNs, 124 doctors, 163 patients) (See Figure 4.1).

- **Public sector**

Three general public hospitals were included in the study with 50% of each sample group being recruited from the first public hospital (n=928 beds); 30% were recruited from the second public hospital (n=402 beds); and 20% were recruited from the third public hospital (n=129 beds). A convenience sample of 241 participants was recruited from 19 primary healthcare centres. A total of 456 participants were recruited from the three public hospitals (169 RNs, 131 doctors, 156 patients) and 241 participants were recruited from the 19 primary healthcare centres (85 RNs, 83 doctors, 73 patients) (See Figure 4.1).

- **RMS**

Two general RMS hospitals were included in the study with 70% of each sample group being recruited from the first RMS hospital (n=816 beds) and 30% being recruited from the second RMS hospital (n=237 beds). A total of 370 participants were recruited from

the two general RMS hospitals (145 RNs, 94 doctors, 131 patients). One cardiac institute within the RMS was included in the study with 188 participants being recruited from this cardiac institute (93 RNs, 26 doctors, 69 patients) (See Figure 4.1).

4.7 Study Instrument

In order to measure the participants' views regarding the RNs' role legitimacy in health promotion relating to CVD, one generic structured self-report questionnaire was developed for all participants, except for the RNs questionnaire which also included the CVD knowledge scale (John et al., 2009), and three items asking the RNs about their previous training in health promotion (See Appendix 2). The generic instrument also measured the personal health behaviours of the participants (i.e. Stages of Change relating to physical exercise, exercise barriers, perceived body weight size and smoking status) and demographic characteristics.

McColl et al. (2001) have recommended the use of a self-report questionnaire as an appropriate tool to measure views and behaviours in clinical settings, where health professionals (i.e. RNs and doctors) experience time pressures, and it also has the potential to produce a high response rate. The self-report questionnaire, therefore, allowed the health professionals (i.e. RNs and doctors) as well as the patients to complete the questionnaires in their own time, which encouraged participation. The questionnaire was anonymous to minimise the risk of acquiescence bias (''yea-saying") (Bowling, 2002), and to encourage the participants to respond more truthfully regarding less socially acceptable responses (e.g. smoking status and perceived body weight size). The authors of each scale used within the study instrument were contacted to obtain consent; one author of the personal health behaviour data was not contactable but the scale is in the public domain (See Appendix 4).

4.7.1 The generic instrument

A generic instrument was developed, as there was no generic instrument identified from the literature to measure the role legitimacy of RNs in health promotion relating to CVD in Jordan. The instrument items were standardised for each sample group (i.e. RNs, doctors, and patients) to enable the collection of their views on the same topics in order to compare between the subgroups (i.e. RNs, doctors, and patients).

The generic instrument comprised four different scales which were derived from the following four scales: the "Promoting General Health" scale (Aldossary, 2010); the "Promoting Physical Activity, and Smoking Cessation and Weight Control" scale (Aldossary, 2010), which measured the health promotion relating to CVD; selected items from both the "King's Nurse Performance" scale (Fitzpatrick et al., 1997) and the "Opinions about Roles of Different Health Care Personnel" scale (Shuriquie, 2006); selected items measuring the personal health behaviours of the participants (Sechrist et al., 1987; McDowell et al., 1997; Greenleaf et al., 2004); and demographic characteristics.

- **General health promotion scale**

The first scale of the generic instrument focuses on promoting general health by RNs using 19 items derived from the "Promoting General Health" scale (Aldossary, 2010). It focuses on promoting general health (i.e. responsibilities, perceptions and constraints) using a four-point Likert response scale. This scale was originally developed by Littlewood and Parker (1992) and was used to measure attitudes of district nurses and health visitors regarding health promotion in the UK. Aldossary (2010) used this scale (19 items) in Saudi Arabia to measure nurses', doctors' and patients' views regarding promoting general health with changes being made to the original items. This scale was

used to measure the participants' views regarding the role legitimacy of the RNs in general health promotion. Each item of this scale was rated by the participants as "strongly disagree", "disagree", "agree" and "strongly agree". The health promotion scale comprised three sub-scales including responsibilities for health promotion by RNs (three positive and three negative items), perceptions of health promotion (one positive item and eight negative items) and constraints to health promotion by RNs (four negative items). The negative items of this scale were reversed. The potential scale scores range from 19 to 76 scores, with the responsibilities sub-scale score (six items) ranging from 6 to 24; the perceptions sub-scale score (nine items) ranging from 9 to 36 and the constraints sub-scale score (four items) ranging from 4 to 16. The higher scores on each sub-scale reflect more positive views in relation to the role of RNs in general health promotion.

This scale was translated into Arabic and used to measure primary healthcare nurses' attitudes and midwives' perception of health promotion in Jordan (Haddad and Umlauf, 1998). The translated version of this scale reported a good level of content validity index (CVI) at 75% with acceptable internal consistency (Cronbach's alpha, α=0.78) (Haddad and Umlauf, 1998).

- **Health promotion and CVD scale**

The second scale of the generic instrument comprised 15 items derived from the "Promoting Physical Activity, Smoking Cessation and Weight Control" scale (Aldossary, 2010). This scale focuses on health promotion and risk factors of CVD (i.e. smoking cessation, weight management and physical activity) using a four-point Likert response scale. This scale was originally developed from the literature and the earlier work of Lawlor et al. (1999). Aldossary (2010) used this scale (15 items) in Saudi

Arabia to measure nurses', doctors' and patients' views regarding the promotion of specific health behaviours (i.e. smoking cessation, weight management and physical activity) with changes being made to the original items. This scale was adopted in the current study to measure the participants' views regarding health promotion by RNs relating to CVD. This scale comprised nine positive and six negative items with the negative items being reversed. Each item was rated by the participants as "strongly disagree", "disagree", "agree" and "strongly agree." The scale scores range from 15 to 60, with higher scores on the scale reflecting more positive views regarding the role of RNs in health promotion relating to CVD.

- **Roles of different healthcare personnel scale**

The third scale of the generic instrument was developed from a combination of two scales, namely, "Opinions of the Roles of Health Care Personnel" scale (Shuriquie, 2006) and the "King's Nurse Performance" scale (Fitzpatrick et al., 1997). A combination of 20 items from the two scales was selected for this study to differentiate between the role of the RNs and roles of the other healthcare personnel (doctors and practical nurses) relating to psychosocial and communication aspects of patient care (e.g. health promotion) in Jordan.

The "Opinions of the Roles of Health Care Personnel" scale was developed by Shuriquie (2006) and previously used in Jordan. Shuriquie's (2006) scale measured the views of different sample groups about the role of medical-surgical nurses and other healthcare personnel's roles (e.g. doctors and practical nurses) in healthcare practice in Jordan. The scale originally comprised 24 items and each item is followed by three alternative responses, namely; "agree", "disagree" or "don't know". For the purpose of the current study, 13 relevant items were selected.

The "King's Nurse Performance" scale was developed by Fitzpatrick et al. (1997) focusing on the physical, psychosocial and communication, professional and management domains of nursing practice using a four-point Likert response scale. Only items relating to the aspects of psychosocial and communication in the patient care domain were selected for this study because they were relevant for the current study. This original domain comprised 14 items, and for the purpose of this study nine items were selected, as five items were not relevant. The "King's Nurse Performance" scale has been used in previous research studies conducted in Jordan (Shuriquie, 2006) and Saudi Arabia (Aldossary, 2010). Shuriquie (2006) translated the "King's Nurse Performance" scale into Arabic and tested the reliability of the scale. The scale demonstrated high reliability, using Cohen's Kappa Coefficient, indicating substantial agreement (0.61 – 0.80) or almost perfect agreement (0.81 – 1.00) for the majority of the items (Shuriquie, 2006).

- **Personal health behaviour data scale**

The fourth scale of the generic instrument collected the personal health behaviour data of the participants. This scale comprised 24 items with 20 items derived from three scales (i.e., Sechrist et al., 1987; McDowell et al., 1997; Greenleaf et al., 2004) to measure their Stages of Change relating to physical exercise, their perceived barriers to exercise and their perceived body weight size; and four items measuring smoking status, health problems limiting physical activity and general health status (See Appendix 2). Personal health behaviours of the participants were collected because previous research has found an association between personal health behaviours of health professionals and their role in health promotion (Gomm et al., 2002; Hodgetts et al., 2004; Hall et al., 2005).

The first sub-scale relating to the personal health behaviour data asked the participants about their Stages of Change relating to personal physical exercise derived from McDowell et al. (1997) with no amendments which was developed by Prochaska and DiClemente (1992). This sub-scale comprised four items followed by two alternative responses ”yes” or ”no”. The second sub-scale relating to the personal health behaviour data was derived from Sechrist et al. (1987) with no amendments measured the perceived benefits of exercise and perceived barriers to exercise. This sub-scale comprised 14 items using a four-point Likert scale and has reported good validity and reliability (Sechrist et al. 1987). The third sub-scale relating to the personal health behaviour data was derived from Greenleaf et al.’s (2004) study which was developed by Stunkard et al. (1983). This sub-scale measured the participants’ perception of their body weight size. This sub-scale comprised two items asking the participants to select the figure which best depicts their actual body weight size and desired body weight size from 1 to 9 body shapes. This scale has been used widely and reported good validity and reliability (Greenleaf et al., 2004).

Additionally, four items followed by ”yes” or ”no”, asking the participants about their smoking status, health problems limiting physical activity and general health status.

- **Demographic data**

The generic instrument also included items relating to the demographic and the professional characteristics of the RNs and the doctors (e.g. field of clinical practice), and personal data of the patients (e.g. age and gender) (See Appendix 2).

4.7.2 Registered Nurses questionnaire

For the RNs sample, an additional CVD knowledge scale was added to the generic instrument in order to meet the two study objectives (i.e. describing the RNs' knowledge of CVD and building an explanatory model of the RNs' role legitimacy of health promotion relating to CVD). This scale drew upon the "Heart Disease Fact Questionnaire-Rheumatoid Arthritis (HDFQ-RA)" questionnaire (John et al., 2009). In addition, the RNs questionnaire included three items asking the RNs if they had received training in smoking cessation, exercise promotion and weight management. The RNs were asked to answer "yes" or "no" and to provide information relating to the training if they had received any (See Appendix 2).

- **Registered Nurses' knowledge of CVD scale**

The RNs' knowledge of CVD scale comprised 16 items which drew upon the "The Heart Disease Fact Questionnaire-Rheumatoid Arthritis (HDFQ-RA 1 and 2) questionnaire" (John et al., 2009). The HDFQ-RA 1 and 2 was developed to measure general knowledge of heart disease in patients with rheumatoid arthritis (16 items), and specific knowledge related to rheumatoid arthritis disease (10 items). For this study, only the items related to CVD knowledge (16 items) were used. Responses to each question are coded as "correct" or "incorrect" and "don't know" (coded as incorrect). The patients and expert investigators of John et al.'s (2009) study confirmed face and content validity of the questionnaire. This questionnaire also demonstrated adequate internal consistency with a Kuder–Richardson-20 formula of 0.65 for HDFQ-RA1 and 0.67 for HDFQ-RA2 (John et al., 2009).

4.7.3 Modifications to the study instrument

- **Modification of the generic instrument**

For the generic instrument, the only modifications related to the roles of different healthcare personnel scale which drew upon two scales (i.e. the "Opinions of the Roles of Health Care Personnel" scale; and the "King's Nurse Performance" scale).

Three items of the "Opinions of the Roles of Health Care Personnel" scale (Shuriquie, 2006) were modified to be more specific to the RNs and increase clarity. For item 1, the reference to "*staff nurse*" was changed to "*RNs*", also adding "*with patients or the family*". For item 2, the word "*nurses*" was replaced by "*RNs*". For item 3, the word "*emotionally*" was added (See Table 4.2).

Table 4.2: Summary of modified items from the "Opinions of the Roles of Health Care Personnel" scale

Original scale items	**Modified scale items**
1. Only **staff nurses** should discuss prescribed medications	Only **RNs** should discuss prescribed medications **with patients or the family**.
2. **Nurses** should decide independently of doctors what nursing care is appropriate for their patients.	**RNs** should decide independently of doctors what nursing care is appropriate for their patients.
3. All nursing staff should comfort and reassure patients	All nursing staff should comfort and reassure patients **emotionally**

Seven items of the "King's Nurse Performance" scale (Fitzpatrick et al., 1997) were modified to enhance specificity for the RNs, rather than general nurses and enhance clarity. For items 1, 2, 4 and 5, the reference to "*in general, RNs are knowledgeable enough to*" was added. For items 3 and 7, the reference to "*only RNs should explain*" was added. For item 4, the reference to "*and self-care management behaviour*" was

removed. For item 6, the reference to "*in general, RNs are able to*" was added (See Table 4.3).

Table 4.3: Summary of modified items from the "King's Nurse Performance" scale

Original scale items	Modified scale items
1. **Assessing** the patient's educational status prior to providing information	**In general, RNs are knowledgeable enough to assess** the patient's educational status prior providing information
2. **Providing** health education relevant to patient's diagnosis and prognosis	**In general, RNs are knowledgeable enough to provide** health education relevant to patient's diagnosis and prognosis
3. **Explaining** forthcoming procedures or investigations to patient	**Only RNs should explain** forthcoming procedures or investigations to the patient
4. **Consulting with** patient (and family if relevant) regarding planned care **and self-care management behaviour**	**In general, RNs are knowledgeable enough to consult** patient (and family if relevant) regarding planned care
5. **Discussing** required care with family if **patient is going to be dependent following discharge**	**In general, RNs are knowledgeable enough to discuss** required care with the family if **the patient is dependent**
6. **Describing** concisely and accurately patient's condition to other healthcare team members	**In general, RNs are able to describe** concisely and accurately patient's condition to other healthcare team members
7. **Giving** information relating to patient's condition to the family to reduce anxiety **and enhance self-confidence**	**Only RNs should give** information relating to patient's condition to the family to reduce anxiety

- **Modification of the Registered Nurses' questionnaire**

Five out of the 16 selected items of the CVD knowledge scale were modified as shown in Table 4.4, in order to make the CVD knowledge items more specific to the RN participants and enhance clarity. For items 1 and 4, the reference to *"level in the blood"* was added. For items 2 and 5, the words "*your"* and "*you are"* were changed to "*a*

person's" and "*s/he is"*. For item 4, *"you have"* and *"you are"* were changed to "*a person has"* and *"s/he is"*.

Table 4.4: Summary of modified items from the CVD knowledge scale

Original scale items	**Modified scale items**
1. A person with high cholesterol is more likely to develop heart disease.	A person with high cholesterol **level in the blood** is more likely to develop heart disease.
2. If **your** 'good' cholesterol (HDL) is high **you are** more likely to develop heart disease	If **a person's** 'good' cholesterol (HDL) is high. **s/he is** more likely to develop heart disease
3. Eating fatty foods does not affect blood cholesterol levels	Eating fatty foods does not affect the cholesterol **level in blood**
4. If **you have** a family history of heart disease, **you are** more likely to develop heart disease	If **a person has** a family history of heart disease, **s/he is** more likely to develop heart disease.
5. If **your** 'bad' cholesterol (LDL) is high **you are** more likely to develop heart disease	If **a person's** "bad" cholesterol (LDL) is high, **s/he is** more likely to develop heart disease

4.8 Refinement, translation and piloting of the study instrument

The draft study instrument was reviewed by two experts in health research to assure the clarity and comprehensiveness of the items, and to assure that the content of the study instrument clearly reflected what the study instrument intended to measure, which was the perceived role legitimacy of the RNs in health promotion relating to CVD. Additionally, to assure the cultural validity of the study instrument for the Jordanian target population, two bilingual Jordanian experts with a professional background in research, clinical nursing and health promotion reviewed the study instrument (in the English language) for clarity and comprehensiveness and recommended the modification of two items. In the RNs' knowledge of CVD scale, the item relating to "*walking and gardening* and developing heart disease" was replaced with "*walking and heavy housework* and developing heart disease" to make it a more relevant activity for Jordanian population. Additionally, regarding the personal health behaviour data scale,

the item relating to "*my partner (or significant other)* does not encourage exercising" was replaced with *"spouse/close friend* does not encourage exercising" to make it more culturally appropriate.

- **Pilot study**

A pilot study was undertaken to obtain feedback from the participants on the clarity and content of the study instrument (Bowling, 2002; Burns and Grove, 2009). The pilot study was also to assure the validity of the study methods and data collection procedure. The study instrument (English version) was distributed to a convenience sample of Jordanian RNs (n=25) working in medical and surgical settings because all medical and nursing education in Jordan is in English. The study instrument included additional open-ended items asking the participants about the clarity of the study instrument; any difficulties while completing the study instrument; and suggestions for improving the study instrument. While conversant with English, more than half of the RNs stated that they did not fully understand the items as the language was in English and they had to read the items more than once to understand the meaning. Therefore, a decision was made to translate the study instrument into Arabic for the RNs and the doctors as well as the patients.

- **Translation and back translation of the study instrument**

One of the key challenges for this study was the translation of the study instrument from English to Arabic. Three scales (i.e. general health promotion scale; health promotion and CVD scale; and roles of different healthcare personnel scale) had been previously translated from English to Arabic by other authors (Shuriquie, 2006; Aldossary, 2010)

and so the Arabic versions of these three scales were obtained for use in the current study.

In order to assure that the translation was accurate, the study instrument was translated using the backward translation procedure recommended by Brislin (1970), in which the original language of the study instrument was translated into Arabic (for the target sample) and then back translated into English (Polit and Peck, 2008) by two bilingual Jordanian translators. The similar meaning of each item in both languages was assured during the translation process by keeping the underlying meaning of the original word rather than translating the exact wording. The same process was repeated until a maximum equivalence between the original language and back-translated versions was achieved (Polit and Peck, 2008). After the translation, the study instrument (Arabic version) was reviewed by two Jordanian bilinguals with a professional background in research, clinical nursing and health promotion who confirmed the clarity and comprehensiveness of the study instrument and assuring its cultural validity.

The Arabic version of the study instrument was then distributed to a convenience sample of patients (n=7) admitted to one public hospital to assess the clarity of the items. The patients had different educational backgrounds (e.g. primary school, secondary school, high school and college or higher) and different ages (e.g. 29 years and under, 30-49 years, 50 years and over). The patients' feedback was positive as they stated that the instrument items were clear. Each questionnaire took an average 15 to 20 minutes to complete.

4.9 Validity and reliability of the study instrument

The validity and reliability of the study instrument are discussed below.

4.9.1 Validity of the study instrument

The validity of the study instrument refers to the degree to which an instrument measures what it is intended to measure (Polit and Beck, 2008). Three types of validity were considered for the study instrument including face, content and construct validity.

For *face validity*, the items of the study instrument were reviewed by four experts in the UK and Jordan who confirmed that the instrument had good face validity. The items of the study instrument reflected the perceived role legitimacy of RNs in health promotion relating to CVD.

Content validity was addressed by ensuring that the content of the study instrument was informed by a critical evaluation of published studies which measured the same concept (e.g. health promotion), for example, in Saudi Arabia (i.e. Aldossary, 2010). The researcher selected the same content (i.e. the generic instrument) for the different sample groups (i.e. RNs, doctors and patients) to explore the RNs' role legitimacy in health promotion relating to CVD by comparing between the views of subgroups (i.e. RNs, doctors, and patients). In addition, the researcher collected data regarding the personal health behaviour of the participants to explore the association between the personal health behaviours and the views regarding the role legitimacy of RNs in health promotion relating to CVD, as this association has been found in previous research (Hodgetts et al., 2004; Hall et al., 2005). The study instrument measured the RNs' knowledge of CVD, as previous research has indicated that there is a relationship between the RNs' knowledge of CVD and their role in health promotion relating to CVD (Segaar et al., 2007). The content of the study instrument was reviewed by a panel of four experts in education and research from Jordan and the UK to assure the clarity

and comprehensiveness of the items and to assure the cultural validity of the study instrument.

For *construct validity* of the study instrument, the Machin and Stevenson's (1997) conceptual framework was used to inform the domains of the study instrument. Machin and Stevenson (1997) have suggested exploring the informal role legitimacy of RNs in health promotion relating to CVD by measuring the RNs' knowledge of CVD; the RNs' role in general health promotion and relating to CVD; and the roles of different healthcare personnel. Additionally, tests for measuring construct validity of an instrument help to determine whether the theoretical construct is being measured. It comes in two forms, firstly, *convergent validity* which tests whether the study construct correlates with other previous tests that measure something similar, and *discriminant validity* is concerned with whether the study construct is measuring what it should be and not something else i.e. another construct which it should not be correlated with (Abramson and Abramson 2008). Factor analysis is one of the methods of psychometric testing used to identify factors (domains) which measure the underlying study construct. The purpose of factor analysis is to identify the number and nature of unobserved variables or factors which explain the variation and co-variation among a number of observed measures (i.e. usually called indicators) (Brown, 2006). It also enables the researcher to describe the variability among observed correlating variables in terms of the potential lower number of unobserved variables (de Vaus, 2013). The results of previous construct validity testing for each scale were as follows:

- **CVD knowledge scale (John et al., 2009)**: John et al. (2009) did not measure the discriminant validity of this scale, however, convergent validity was examined. The study set out to measure the construct validity, namely, patients

who had received CVD education or had taken medications for CVD, or had CVD risk factors were more likely to have a higher CVD knowledge compared to their counterparts. The results showed (using the Mann–Whitney test) that patients who had self-educated themselves by reading about CVD (U=1215.0, p=0.05) and those who reported taking CVD medication (U=1302.0, p=0.03) had statistically significantly higher knowledge scores than their counterparts. This provides some assurance that this scale measures what it intends to measure (CVD knowledge).

- **General health promotion and health promotion and CVD scales (Al-dossary, 2010)**: construct validity was not tested for these two scales.
- **Roles of different healthcare personnel scale:** this scale comprised of items derived from two scales (i.e. "King's Performance Scale"; and "Opinions of the Roles of Health Care Personnel Scale"). Only one domain relating to psychosocial and communication aspects of patient care (e.g. health promotion) was selected from the "King's Performance Scale". Fitzpatrick et al. (1997) conducted principal components analysis to examine the validity of the "King's Performance Scale's" underlining dimensions. Eight components with eigenvalues greater than one were extracted from the "King's Performance Scale". The first component explained 43.5% of the total variance with the second component accounting for just under 10%. The scale items showed some tendency to load on separate factors. The "King's Performance Scale" also tested the convergent validity using the Spearman's rank correlation. The results showed a higher score for observed practice in the psychosocial domain and a higher score for the psychosocial domain in the care plan (Y= 0.227, p<0.025). Overall, the results of principal components analysis test and convergent validity

indicated that the “King’s Performance Scale” had good construct validity. In terms of the second scale relating to the “Opinions of the Roles of Health Care Personnel” scale, Shuriquie, (2006) did not report testing the construct validity.

- **Personal health behaviour data scale**: the construct validity for the first sub-scale of “Stages of Change” (Prochaska and DiClemente, 1992) was tested. In a later study by Julie et al. (2001) tested construct validity of the” Stages of Change” sub-scale relating to physical exercise by examining the relationship between exercise pros and cons and exercise confidence scores across the “Stages of Change” using ANOVA and Tukey Honest Significant Difference (THSD) tests. This study reported significant ($p<0.001$) changes regarding pros and cons and situational confidence across the “Stages of Change”, in particular between those who were at the maintenance stage and those who were at the pre-contemplation and contemplation stages, indicating some confidence that this scale measures what it intends to measure. The second sub-scale relating to the perceived benefits of exercise and perceived barriers to exercise (Sechrist et al. 1987) examined factor validity and yielded a nine-factor initially which explained 65.2% of the variance. Second order factor analysis yielded a two-factor solution, one a benefits factor and the other a barriers factor. The construct validity of the third sub-scale, namely, the figure rating scale (Stunkard et al., 1983) was examined using Pearson’s correlation coefficients to explore the relationship between the figure rating scale and BMI (Cardinal et al., 2006). The correlation between the figure rating scale and BMI was strong ($r=0.92$), indicating good construct validity.

4.9.2 Reliability of the study instrument

Reliability refers to the consistency with which an instrument measures and repeatedly measures a given phenomenon (Burns and Grove, 2009). The internal consistency of each scale was measured using Cronbach's alpha to assess how closely a set of items were related within each scale. Tavakol and Dennik (2011) recommended measuring Cronbach's alpha for each domain of a study instrument rather than for the entire study instrument. Overall, the study instrument reported good internal consistency (α=0.70 and over) for the four scales (See Table 4.5), including the general health promotion scale (Cronbach's alpha, α=0.75); the health promotion relating to CVD scale (Cronbach's alpha, α=0.76); the roles of different healthcare personnel (Cronbach's alpha, α=0.75); and personal health behaviour data (Cronbach's alpha, α=0.82). The RNs' knowledge of CVD scale reported lower internal consistency (Cronbach's alpha, α=0.56) compared to the other scales. The possible explanation for the low internal consistency in the RNs' knowledge scale could be related to the dichotomous responses of this scale (correct or incorrect) affecting the Cronbach's alpha. In addition, the majority of the RNs correctly answered the scale items (negative skew) which could be another explanation for the lower internal consistency of this scale.

Table 4.5: Summary of internal consistency (Cronbach's alpha) of each scale

Scale	Total sample	RNs	Doctors	Patients
RNs' knowledge of CVD scale	–	α=0.56	–	–
General health promotion scale	α=0.75	α=0.78	α=0.76	α=0.72
General health promotion relating to CVD scale	α=0.76	α=0.78	α=0.70	α=0.76
Roles of different healthcare personnel scale	α=0.75	α=0.71	α=0.70	α=0.79
Personal health behaviour data scale	α=0.76	α=0.79	α=0.73	α=0.75

- **Test-retest results**

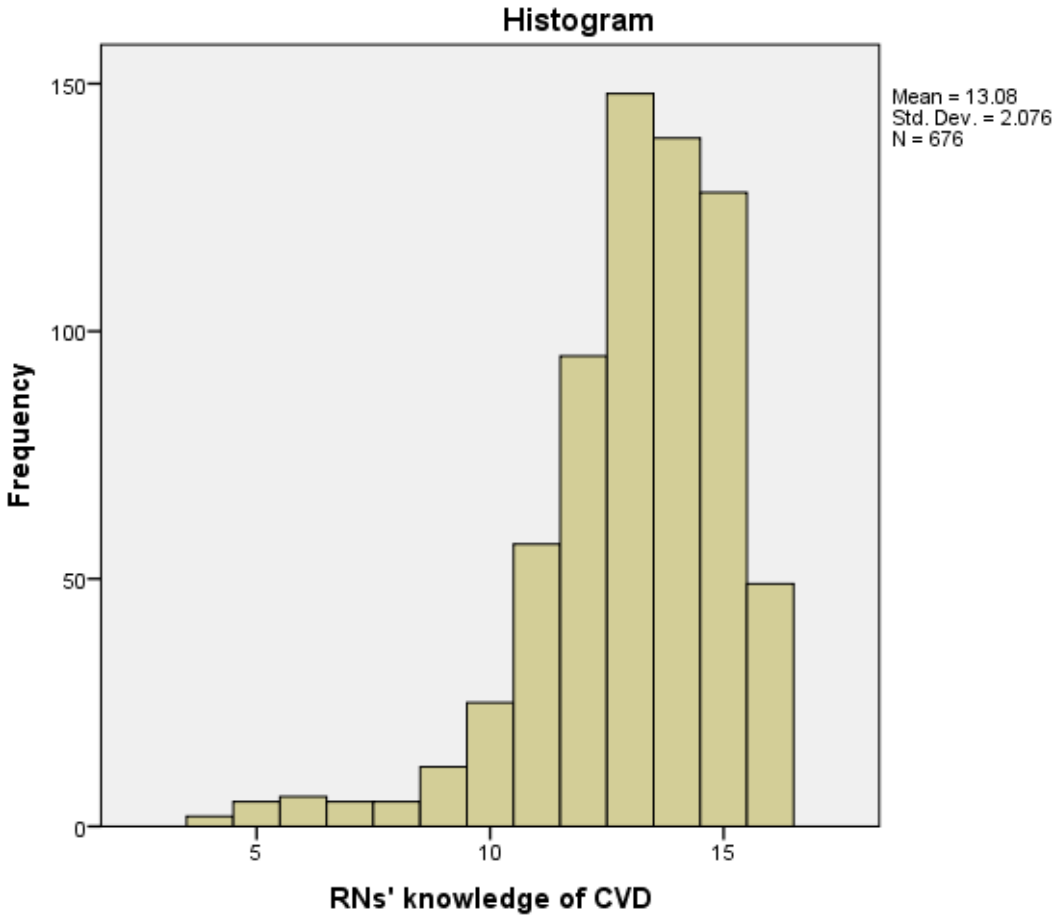
A test-retest was undertaken to assess the stability of the study instrument over time. A sample of 27 RNs from different care settings completed the questionnaire on the first occasion. After three weeks, as recommended by Burns and Grove (2009), 26 RNs (one RN non-respondent) completed the questionnaire again. The results were compared using Cohen's Kappa Coefficient and a percent agreement. The findings indicated that overall there was a moderate to high agreement in all of the scales. The majority of the items (n=69, 73%) demonstrated moderate to high agreement (0.41-1.00) with just under a quarter (22%) of the items (n=21) demonstrating slight to fair agreement (0.0-0.40) and 4% of the items (n=4) demonstrating no agreement. Across the five scales, the roles of different healthcare personnel scale demonstrated a lower level of agreement, whereas both the general health promotion and personal health behaviour data scales showed higher levels of agreement between the test and retest. The details of test-retest results are presented in Appendix 3.

- **Sensitivity of the study instrument**

To measure the sensitivity of the study instrument, frequency histograms were examined to see if the participants' scores were normally distributed. Overall, four scales of the study instrument (i.e. the general health promotion scale; health promotion relating to CVD scale; roles of different healthcare personnel scale; and personal health behaviour data scale) were normally distributed, indicating that these scales had high sensitivity. The RNs' knowledge of CVD scale was not normally distributed (i.e. negatively skewed), with the majority of the RN participants answering the items correctly (mean score=13.08, SD=2.076), which indicates that this scale was not sufficiently sensitive to measure varying levels of CVD knowledge (See Figure 4.2

below). As a result, the researcher divided the CVD knowledge scale into three levels (i.e. low, adequate and high) in order to differentiate between those RNs who had higher CVD knowledge and those who had lower CVD knowledge.

Figure 4.2: Frequency histogram for Registered Nurses' knowledge of CVD



4.10 Ethical considerations

Initially, ethical approval to conduct this study was obtained from the King's College London Research Ethics Committee. Ethical approval was then obtained from the relevant research ethics committees or equivalent in Jordan (i.e. RMS and public sectors). With regard to the private sector, the approval was obtained from each selected private hospital (See Appendix 4).

Once permission to access the study site had been given, the eligible participants were given a participant information sheet. Bowling (2002) has suggested that ethical principles such as assuring confidentiality, voluntary recruitment, obtaining informed consent and providing participants with sufficient time to consider participating in the study are essential when carrying out research. Confidentiality, voluntary participation and the right to refuse participation were, therefore, emphasised in the participant information sheet. The researcher explained the study purpose to the patient participants and gave a reasonable time (one day; this was to enable recruitment of in-patients if they so wished) to consider study participation. The researcher informed the patients that their refusals to participate would not affect their right to treatment or caring in any way. This was to assure voluntary participation. The RNs and the doctor participants were given five days to consider participation in the study. The researcher noted in the participant information sheet that it would not be possible to withdraw data once the questionnaire has been returned. A completed questionnaire was considered as consent to participation.

No potential adverse effects, hazards or risks to the safety of the participants involved were anticipated. The patient participants were approached personally by the researcher and data collectors and were encouraged to contact the researcher to discuss their concerns, but no patient contacted the researcher. The participants were asked to tick a box in the questionnaire to agree for their information to be processed for the purpose of the study and in accordance with the Data Protection Act 1998 (See Appendix 2).

The participants were informed how their data would be used in the participant information sheet. Confidentiality in this study was assured. Initially, the completed questionnaires and other research related paperwork were stored in a locked filing

cabinet in Jordan. The researcher then reviewed and deleted any records of no short term value (such as copies of orders, draft documents or duplicate records). Later, the data records were sent via special secure delivery (DHL) from Jordan to the UK. The paper research records were stored in a locked filing cabinet within the School of Nursing and Midwifery, until the timeline for their destruction through the King's College London confidential paper waste destruction facility. The data were stored on a password protected computer system and/or encrypted USB in the School of Nursing and Midwifery. Only the statistician and study supervisors had access to anonymous data. All collected data were treated in accordance with the terms of the Data Protection Act 1998. After completion of the study (no longer than 4 years), the data will be destroyed.

4.11 Access to the study sample

The researcher sent a letter to the key gatekeeper of each healthcare sector, outlining the purpose of the study and requesting official permission from each sector to access the hospitals (See Appendix 4).

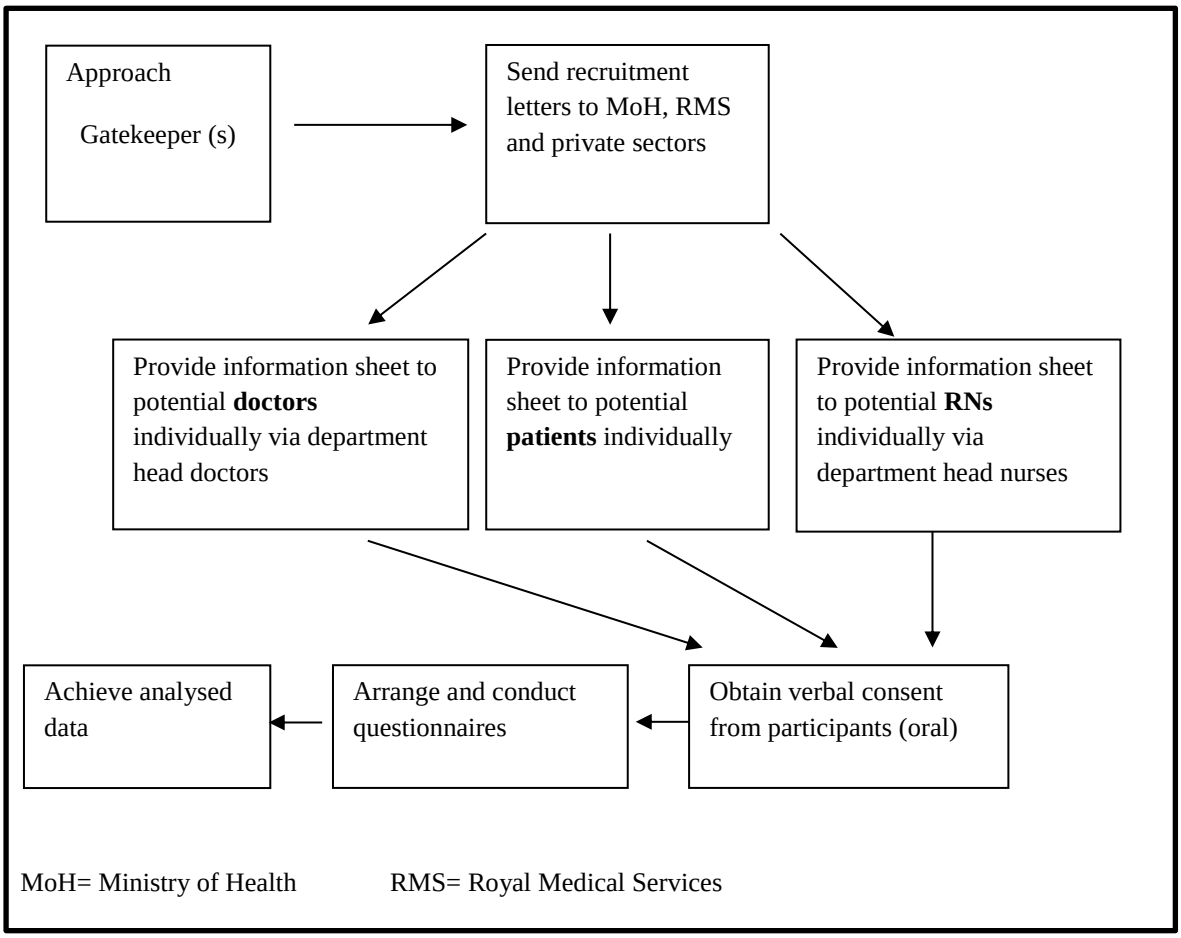
Public sector access: For the public sector, an official letter outlining the purpose of the study and a copy of the study instrument were sent to the Ministry of Health in Jordan, to obtain official permission to access the public hospitals and primary healthcare centres to conduct the study. This letter was accompanied by information about the target population. After obtaining official permission, the researcher then contacted the director of each selected hospital and primary healthcare centre and sent an official letter providing information about the study (See Figure 4.3).

RMS access: For the RMS, an official letter outlining the purpose of the study accompanied with information about the target population and a copy of the study

instrument were sent to the directorate of the RMS to access this sector. The researcher also requested secure access to the RMS hospitals and the cardiac institute (See Figure 4.3).

Private sector access: As each private hospital has its own regulations and policies which varied, the researcher contacted each hospital to gain access. An official letter introducing the purpose of the study and information about the target population and a copy of the study instrument were sent to each private hospital selected for the study. The researcher then contacted each hospital to follow up the request (See Figure 4.3).

Figure 4.3: Data collection procedure



4.11.1 Data collection procedure

The data collection process took place over six and a half months (April 2012 to October 2012), including refinement, translation and piloting of the study instrument (one month); test-retest (45 days); obtaining official permission from each sector (45 days while undertaking the test-retest); data collection (four months); and computerised data entry (four months while collecting the data). The researcher was assisted by two Jordanian data collectors who were recommended by a professor of the Nursing School at the University of Jordan. Experience, professionalism and good communication skills were considered when recruiting data collectors as recommended by Polit and Beck (2008). Prior to data collection, the researcher met with the data collectors to explain the purpose of the study and arrange for a training day. The purpose of the training day was to explain the process of data collection and assure consistency in the distribution and collection of the questionnaires. The eligible participants were invited to take part in the study and provided with the participant information sheets. Those who agreed to participate in the study were asked to complete the questionnaires.

The researcher's contact details were provided on the last page of the questionnaires to permit participants to ask questions should they have any. The researcher gave each completed questionnaire a subject code number (e.g. RMS hospital one). The data collectors were instructed to keep the completed questionnaires in a locked filing cabinet until they handed it in to the researcher. The completed questionnaires were kept in file folders (in a locked filing cabinet at the researcher's home). The details of the data collection procedure for each sample group are detailed below.

- **The Registered Nurse sample**

Data collection from the RNs took place by gaining access via the nursing directors and then through a head nurse of each targeted unit/department (i.e. medical and surgical wards and out-patient departments). An appointment was arranged with the head nurses to introduce the study and identify the number of questionnaires which were required considering the number of the RNs in each targeted department/unit. Assuring confidentiality and the right to refuse participation in the study were stressed by the researcher. The head nurses notified all RNs in each target department/unit about the study. The participant information sheets and the questionnaires were distributed by the head nurses. The completed questionnaires were placed in an envelope which was available in a special drawer located in the head nurse's office. The researcher/data collectors then arranged for another appointment (after five days) with the head nurses to collect the completed questionnaires. In some departments/units, the head nurses were not available to distribute the questionnaires. Therefore, the researcher/data collectors distributed the questionnaires to the RNs and returned after five days to collect them. On some occasions, the RNs contacted the researcher to ask questions about the questionnaire.

The research/data collectors visited each selected primary healthcare centre and explained the purpose of the study and distributed the information sheets and questionnaires to the RNs who worked in each primary healthcare centre. The RNs were given five days to complete the questionnaires.

- **The doctor sample**

The researcher accessed the doctor sample through the medical directors and the department heads of each target hospital. The researcher attempted to distribute the questionnaires through the medical directors and department heads but it was not always successful resulting in a low-response rate. Therefore, the researcher/data collectors distributed the participant information sheets and questionnaires in person to the doctors across different hospitals and primary healthcare centres. Assuring confidentiality and the right to refuse participation in the study were stressed by the researcher/data collectors. The department head of the medical and surgical wards distributed the information sheets and the questionnaires to the doctors and asked them to return the completed questionnaires after five days. The completed questionnaires were placed in an envelope which was available in a special drawer located in the medical secretary's office. The researcher/data collectors emphasised the importance of the doctors' role in the healthcare team to encourage them to participate in the study. Additionally, on some occasions, the researcher/data collectors followed up with the doctors in their private clinics to collect the questionnaires and enhance the response rate. The research/data collectors visited each selected primary healthcare centre, explained the purpose of the study and distributed the participant information sheets and questionnaires to the doctors who worked in each centre. The doctors were given five days to complete the questionnaires.

The researcher encountered some issues during the data collection with the doctors. The researcher, for example, distributed twelve questionnaires to the doctors working in different departments at one private hospital and asked them to return the completed questionnaires to the medical room after five days. The researcher visited the hospital

after five days and found that the medical room was moved to another floor. This resulted in the loss of up to twelve completed questionnaires. The researcher redistributed the questionnaires to the doctors and some agreed to participate again while others declined.

- **The patient sample**

Data collection and distribution of the questionnaires to the patients were conducted by the researcher and data collectors on an individual basis in the target department/clinics. In the acute care setting, an appointment was arranged with the head nurse of each department to introduce the study. Then, the head nurse arranged a convenient time for the patients to meet with the researcher/data collectors. In the out-patient settings and the primary healthcare centres, the researcher/data collectors approached the patients either individually or as a group to explain the purpose of the study. Later, the researcher introduced the aim of the study to each patient, assuring confidentiality and anonymity and stressing voluntary participation. The patients were given time to read the information sheet about the study. The researcher/data collectors were careful in their approach to the patients because of their vulnerable position as recipients of care which might have made it difficult for them to decline participation in the study. The researcher and data collectors notified the patients that their refusal to participate would not affect their right to treatment and care in anyway and assured the patients of anonymity. After this, the researcher and data collectors had once again asked the patients about their willingness to participate in the study. This was to assure that the participation of the patients was voluntary. Those who were interested in participating in the study were asked to complete the questionnaires and offered help in completing the questionnaires, for example, those patients who were illiterate or were unable to

read the questionnaires for medical reasons, the researcher/data collectors read the questionnaire items for them. The patients who completed the questionnaires themselves with no assistance, the researcher/data collectors arranged to collect the completed questionnaires the next day. A special box in each clinic/department was available for the patients to return the completed questionnaires if they wish to use it rather than return it in person to the data collectors/researcher.

4.12 Data analysis

The data were analysed using SPSS version 20.0 statistical software. The data comprised nominal, ordinal and continuous variables and the appropriate data analysis tests were used. Descriptive statistics including frequency and cross tabulation tests were performed. The distribution of data was not normally distributed for the RNs' knowledge scale, whereas the distribution was normal for four scales of the study instrument (i.e. the general health promotion scale; health promotion relating to CVD scale; roles of different healthcare personnel scale; and personal health behaviour data scale). Parametric and non-parametric tests were, therefore, utilised for this study. Type I error (false positive) was avoided by setting the significance level at less than 5% ($p<0.05$). Type II error (false negative) occurs when the study fails to detect any real statistically significant differences which usually happens if the sample size is small (LoBiondo-Wood and Haber, 2010). This error was avoided by increasing the statistical power and recruiting a large sample size (n=1,726).

The Chi-square test was used to explore the relationships between two categorical variables (e.g. RNs' gender and healthcare sectors). The parametric t-test was used to explore the difference between a continuous variable (e.g. general health promotion score) and a categorical variable with two groups (e.g. gender). The parametric one-way

ANOVA test or the non-parametric Kruskal-Wallis test were utilised to measure the difference between one categorical variable with more than two groups (e.g. healthcare sectors) and one continuous variable (e.g. health promotion and CVD score).

A decision was taken to exclude cases that had one or more missing values from the analysis as recommended by Allison (2002). In the first instance, the dependent variables were tested for normality so that the most appropriate methodological approach to the statistical modelling could be determined. Five dependent variables (i.e. views of responsibilities for health promotion by RNs; perceptions of health promotion by RNs; perceived constraints to health promotion by RNs; perceived RNs' role in general health promotion; and perceived role in health promotion relating to CVD) were all normally distributed whereas one dependent variable (levels of CVD knowledge) was not. The ranked levels of CVD knowledge scores were used rather than the absolute values before fitting the model.

Each dependent variable (i.e. RNs' knowledge of CVD score; responsibilities for health promotion by RNs score, RNs' perceptions of health promotion score; RNs' perceptions of constraints to health promotion score; RNs' perceptions of health promotion relating to CVD score) was examined individually to test their associations with the significant variables (all categorical e.g. healthcare sector) from the results of the bivariate analysis (i.e. the association between the instrument score and each categorical independent variable (e.g. smoking status) was tested for statistical significance using either a t-test (two categories) or ANOVA (three or more categories) when data were normally distributed, and the Mann-Whitney (two categories) or Kruskal-Wallis (three or more categories) tests when the data were not normally distributed). The univariate General Linear Model (GLM) which is a form of traditional regression modelling was used to

understand the RNs' role legitimacy in general health promotion model and the RNs' role legitimacy in health promotion relating to CVD model.

The GLM was chosen because it allows the researcher to explore of the association of each significant categorical variable (for example, healthcare sector) from the bivariate analysis with the dependent variable. This modelling approach also facilitated an examination of the effect of modifying factors (for example, the continuous variables that measure RN responsibilities for health promotion) on the role of RNs in general health promotion and health promotion relating to CVD. When developing the general health promotion model, all the significant categorical variables from the results of the bivariate analysis were entered into the model as fixed factors in SPSS, whereas all continuous variables were entered into the model as covariates. Modelling was fitted to the data to ascertain which variables had significant associations with the dependent variable (e.g. general health promotion) while controlling for the other independent variables (such as gender and age). Post hoc tests were undertaken to explore the direction of any relationship (for example, estimated marginal means) between the variables. The same modelling technique was used for health promotion relating to CVD model.

A decision was made to rank the RNs' knowledge of CVD score (because it was not normally distributed) and then analyse the rank values, whereas the other dependent variables (i.e. the general health promotion scale; health promotion relating to CVD scale; roles of different healthcare personnel scale; and personal health behaviour data scale) were analysed using the actual values without ranking as they were normally distributed.

- **Data analysis of the generic instrument**

For the purpose of analysis, response categories to some items of two scales of the generic instrument were combined due to the low number of responses. In the general health promotion scale, “disagree” and “strongly disagree” responses in some items were combined into “disagree”. In addition, responses to “agree” and “strongly agree” in some items were combined into “agree”. In the health promotion relating to CVD scale, the number of responses to “agree”, “disagree” and “strongly disagree” in some items of the scale was low, therefore, responses to these three items were combined into “not strongly agree”. In addition, responses to “disagree” and “strongly disagree” in some items were combined into “disagree”.

In the personal health behaviour data scale, inconsistent responses to the items of the Stages of Change relating to the physical exercise were excluded because it was not possible to categorise these responses as representing one of the Stages of Change relating to their physical exercise.

4.13 Summary

The research design used in this study was a correlational cross-sectional survey. This chapter has described the target population, study sites and settings, sampling strategy, study instrument, ethical considerations, and data collection procedure and analysis methods. Throughout, attempts were made to assure the rigour of the study. The internal validity of the study instrument was considered by refinement, translation and piloting of the study instrument. The reliability of the study instrument was considered by assessing the internal consistency and undertaking a test-retest. The next chapter reports the study findings to meet the study aim and objectives.

Chapter Five

Findings One: Demographic, Personal and Professional Data of the Participants (i.e. RNs, Doctors and Patients)

5.1 Introduction

This chapter profiles the sample of the RNs and the doctor participants by their demographic, professional and personal health behaviour data, and reports the findings relating to the RNs' knowledge of CVD. The chapter also profiles the patient participants by their demographic and personal health characteristics.

5.2 Response rate

The overall study response rate was 71.9% (n=1,726). Among the three sample groups (i.e. RNs, doctors, and patients), the RNs' response rate was 85.3%, the doctors' response rate was 57.7%, and the patients' response rate was 74.8%. Thus, there was an inconsistent pattern of response rate by healthcare sector for the three sample groups (See Table 5.1), with fewer doctors responding, as compared with the RNs and the patients. In terms of healthcare sectors (i.e. public, private, and RMS), the pattern of the RNs' response rate was consistently high across the three healthcare sectors, whereas the doctors' and the patients' response rates varied.

Table 5.1: Response rate for each sample group by healthcare sector

	Total response rate (71.9%)					
Healthcare sector	**RNs**		**Doctors**		**Patients**	
	n	**%**	**n**	**%**	**n**	**%**
Public	254	84.6%	214	71.3%	229	76.3%
Private	184	92.0%	124	62.0%	163	81.5%
RMS	238	79.3%	120	40.0%	200	66.6%
Total	676	85.3%	458	57.7%	592	74.8%

5.3 Demographic data

Table 5.2 presents the demographic characteristics for the total sample as well as for the RNs, the doctors and the patients, respectively. A total of 1,726 participants completed the questionnaires. The majority of the participants (n=1,548, 91.9%) were Jordanian and male (n=996, 58.3%). Of the total sample, 40.4% (n=497) were recruited from the public sector, almost one third from the RMS (n=558, 32.3%) and just over one quarter from the private sector (n=471, 27.3%). Almost half of the sample were young, aged 20-29 years (n=806, 47.4%), with just under one quarter aged 30-39 years (n=411, 24.1%) and just over one quarter (n=485, 28.5%) aged 40 years and over.

5.3.1 Registered Nurses

The majority of the RN participants were Jordanian (n=650, 97.5%) and just over half were female (n=356, 53.1%) (See Table 5.2). Similar proportions of the RNs were recruited from both the public sector and the RMS (n=254, 37.6%; n=238, 35.2%, respectively) with just over one quarter (n=184, 27.2%) recruited from the private sector. More than two thirds of the RNs were young, aged 20-29 years (n=480, 71.5%); 20.6% (n=138) were aged 30-39 years; and 7.9% (n=53) were aged 40 years and over.

5.3.2 Doctors

As Table 5.2 shows, the majority of the doctor participants were male (n=346, 76.2%) and Jordanian (n=403, 89.6%). The highest proportion of the doctors worked in the public sector (n=214, 46.7%) with over one quarter working in the private sector (n=124, 27.1%) and a similar proportion working in the RMS (n=122, 26.2%). Two thirds of the doctors were aged 20-39 years (n=317, 69.8%), and just under one-third (n=137, 30.2%) were aged 40 years and over.

5.3.3 Patients

The patients were mainly Jordanian (n=495, 87.3%) and male (n=336, 57.4%). Just over one third (n=229, 38.7%) were recruited from the public sector, and one third (n=200, 33.8%) were recruited from the RMS, whereas just over one quarter (n=163, 27.5%) were recruited from the private sector. The distribution of the patients' ages was almost similar across the four age groups (See Table 5.2).

Table 5.2: Demographic data of the study sample

	Total sample (n=1726)			RNs (n=676)		Doctors (n=458)		Patients (n=592)	
	Items	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Gender (n=1709)	Male	996	58.3	314	46.9	346	76.2	336	57.4
	Female	713	41.7	356	53.1	108	23.8	249	42.6
Healthcare sector (n=1726)	Public	697	40.4	254	37.6	214	46.7	229	38.7
	Private	471	27.3	184	27.2	124	27.1	163	27.5
	RMS	558	32.3	238	35.2	120	26.2	200	33.8
Age group (n=1702)	20-29 years	806	47.4	480	71.5	193	42.5	133	23.1
	30-39 years	411	24.1	138	20.6	124	27.3	149	25.8
	40-49 years	256	15.0	45	6.7	57	12.6	154	26.7
	50 years and more	229	13.5	8	1.2	80	17.6	141	24.4
Nationality (n=1684)	Jordanian	1548	91.9	650	97.5	403	89.6	495	87.3
	Non-Jordanian	136	8.1	17	2.5	47	10.4	72	12.7

5.4 Personal health behaviour data of the study sample

As indicated in Table 5.3, the majority of the participants (n=1543, 90.4%) reported that they intended to become more physically active in the next six months, whereas under one third (n=510, 29.8%) reported being currently engaged in regular physical activity. Just under one quarter (n=417, 24.5%) of the participants reported having been regularly physically active for the past six months. The Stages of Change relating to physical exercise were measured for the participants. As indicated in Figure 5.1, the majority of the participants were at the contemplation stage (n=1058, 64.8%); whereas

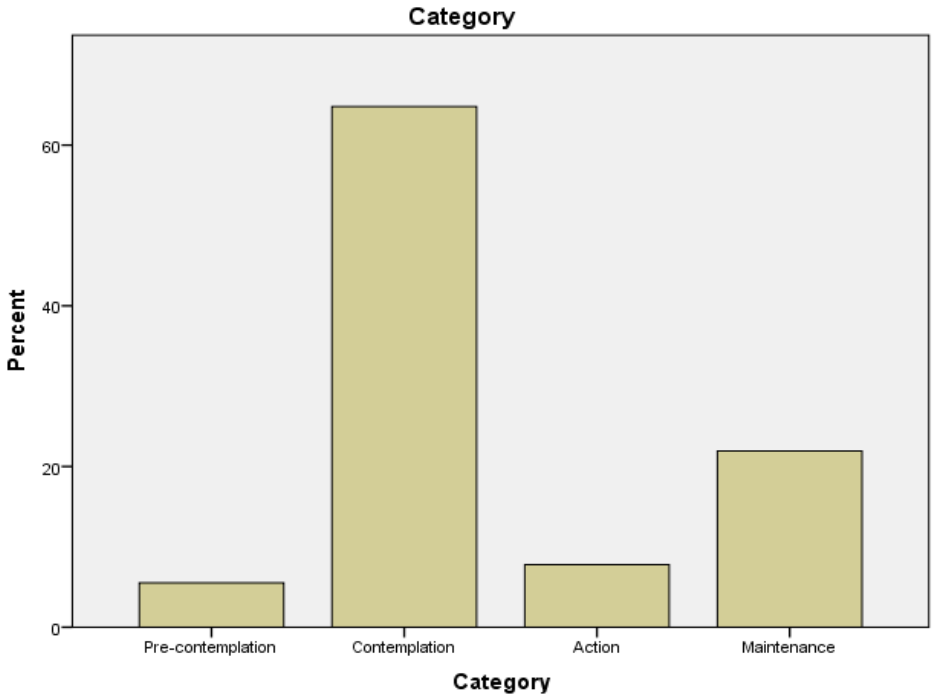
just over one fifth were at the maintenance stage (n=358, 21.9%); 7.8% (n=127) were at the action stage; and 5.5% (n=90) were at the pre-contemplation stage.

Regarding smoking status, over one quarter (n=490, 28.7%) of the entire sample reported being a current smoker; whereas 14.1% (n=240) had smoked in the past and 57.2% reporting having never smoked. Across the sample, more RNs and doctors than the patients reported being active smokers, whereas more RNs than the doctors and the patients reported never smoked (χ^2=10.257, 4*df*, *p*=0.036). Additionally, more patients than doctors and RNs had smoked in the past. The following sections set out the smoking status, the Stages of Change data relating to physical exercise and body weight size for each sample group (i.e. RNs, doctors and patients).

Table 5.3: Personal health behaviour data (smoking status and physical activity) of the study sample

Items		Total sample (n=1726)		RNs (n=676)		Doctors (n=458)		Patients (n=592)	
		n	%	n	%	n	%	n	%
Smoking status (n=1707)	Never smoked	977	57.2	400	59.6	253	55.8	324	55.6
	Smoked in the past	240	14.1	73	10.9	68	15.0	99	17.0
	Current smoker	490	28.7	198	29.5	132	29.1	160	27.4
Currently physically active (n=1708)	Yes	785	46.0	329	49.0	199	44.0	257	44.0
Intending to become more physically active in the next 6 months (n=1707)	Yes	1543	90.4	606	90.2	412	91.6	525	89.7
Currently engaging in regular physical activity (n=1709)	Yes	510	29.8	196	29.3	133	29.4	181	30.8
Have been regularly physically active for the past 6 months (n=1703)	Yes	417	24.5	163	24.4	110	24.4	144	24.7

Figure 5.1: Stages of Change relating to the physical exercise of study sample



5.4.1 Stages of Change relating to physical exercise and smoking status

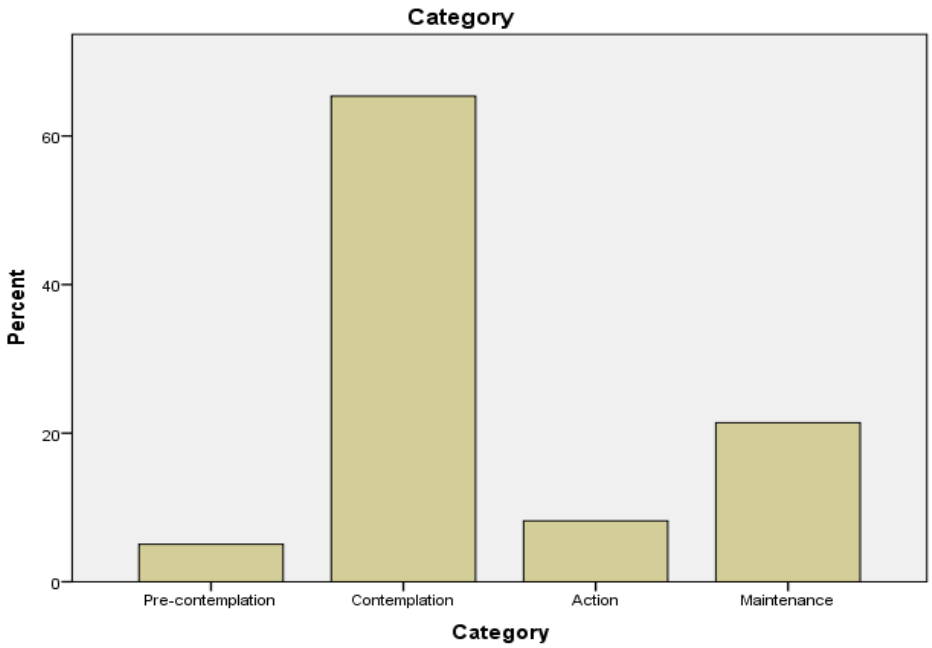
The section discusses the Stages of Change data relating to physical exercise for each sample group (i.e. RNs, doctors and patients) along with their smoking status.

- **Registered Nurses**

Approximately half of the RNs (n=329, 49.0%) reported being currently physically active and the majority (n=606, 90.2%) intended to become more physically active in the next six months. Under a third of the RNs (n=196, 29.3%) reported being currently engaged in regular physical activity and just under a quarter (24.4%, n=163) reported having been regularly physically active for the past six months (See Table 5.3). The majority of the RNs were at the contemplation stage (n=415, 65.4%) with almost one fifth being at the maintenance stage (n=136, 20.1%), 8.2% (n=52) at the action stage and 5.0% (n=32) at the pre-contemplation stage (See Figure 5.2). Twenty-nine percent

of the RNs (n=198) reported being current smokers with 10.9% (n=73) reporting a history of smoking and 59.6% (n=400) reporting never having smoked (See Table 5.3).

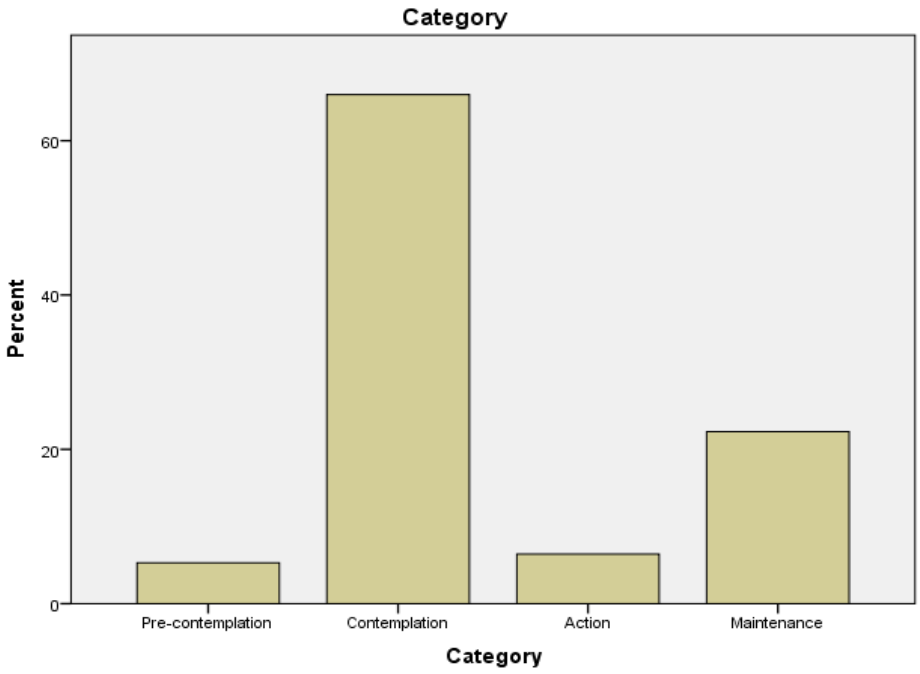
Figure 5.2: Stages of Change relating to the physical exercise of Registered Nurses



- **Doctors**

As indicated in Table 5.3, the majority of the doctors (n=412, 91.6%) reported intending to become more physically active in the next six months. Just under half of the doctors (n=133, 44.0%) reported being currently physically active while less than one third (n=133, 29.4%) reported being currently engaged in regular physical activity. Just under a quarter (n=110, 24.4%) reported having been regularly physically active for the past six months. Two thirds of the doctors were at the contemplation stage (n=287, 66.0%), 22.3% (n=97) at the maintenance stage, 6.4% (n=28) at the action stage and 5.3% (n=23) at the pre-contemplation stage (See Figure 5.3). Twenty-nine percent of the doctors (n=132) reported being a current smoker with 15.0 % (n=68) reporting a history of smoking and 55.8% (n=253) never having smoked before (See Table 5.3).

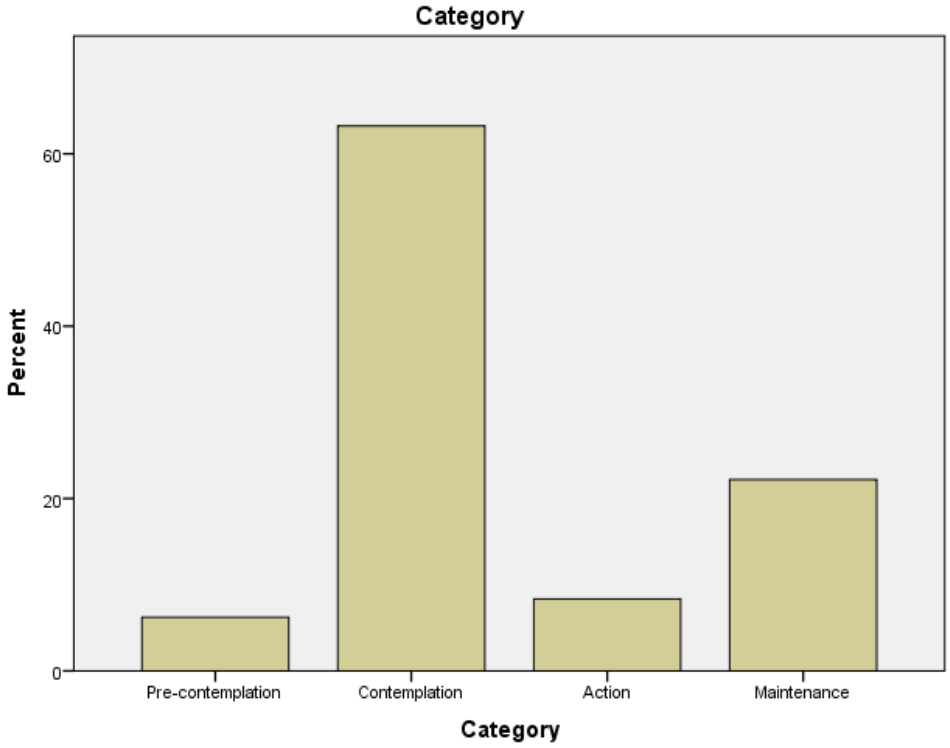
Figure 5.3: Stages of Change relating to the physical exercise of doctors



- **Patients**

Forty-four percent of the patients (n=257) reported being currently physically active, while 89.7% (n=525) reported intending to become more physically active in the next six months. Just under a third of the patients (n=181, 30.8%) reported being currently engaged in regular physical activity and 24.7% (n=144) reported having been regularly physically active for the past six months. Twenty-seven percent of the patients (n=160) reported being current smokers with 17.0% (n=99) having smoked in the past and 55.6% (n=324) never smoked before (See Table 5.3). The majority of the patients were at the contemplation stage (n=356, 63.2%); 22.2% (n=125) were at the maintenance stage; 8.3% (n=47) were at the action stage; and 6.2% (n=35) were at the pre-contemplation stage (See Figure 5.4).

Figure 5.4: Stages of Change relating to the physical exercise of patients



5.4.2 Body weight size

Table 5.4 shows the reported actual and desired body weight size of the total sample, and for the RNs, the doctors and the patients, respectively. Just under one quarter of the total sample (n=391, 23.6%) reported their actual body weight size as normal, with 43.3% (n=717) reporting their actual body weight size as below normal (e.g. slim) and one third (n=549, 33.1%) reported their actual body size as overweight. When the participants were asked about their desired body weight size, just under one third (n=479, 29.2%) desired their body weight size within normal limits; whereas 56.2% (n=922) desired their body weight size below normal limits and 14.4% (n=238) desired to be overweight body size. The survey revealed that more RNs than doctors and

patients were below normal body weight size whereas more doctors and patients than RNs were of overweight body size (χ^2=61.60, 4*df*, p<0.001).

5.4.2.1 Registered Nurses

Just under one quarter of the RNs reported their perceived actual body weight size as normal (23%, n=153), with 53.3% (n=352) reporting their actual body weight size below normal and 23.6% (n=155) reporting their actual body size as overweight. One quarter of the RNs desired their body weight size as normal (n=133, 20.1%), with two thirds (n=439, 66.4%) desiring their body weight size below normal and 16.6% (n=77) desiring their body size as overweight (See Table 5.4).

5.4.2.2 Doctors

Just over one quarter of the doctors (n=117, 26.5%) reported their actual body weight size as normal with one third (n=147, 33.3%) reporting their body weight size below normal and 40.1% (n=177) reporting their body size as overweight. Just over one third of the doctors (n=155, 35.3%) desired their body weight size as normal with 47.2% (n=207) desiring their body weight size below normal and 18% (n=77) desiring their body size as overweight (See Table 5.4).

5.4.2.3 Patients

A fifth of the patients (21.8%, n=121) reported their actual body weight size as normal with 39.2% (n=217) reporting their body weight size below normal and a similar proportion (n=214, 39.1%) reported their body size as overweight. Just over one third of the patients (n=191, 35.4%) desired their body weight size as normal with just over half (n=276, 51.2%) desiring their body weight size below normal and 13.4% (n=72) desiring their body weight size as overweight (See Table 5.4).

Table 5.4: Personal health behaviour data (body weight size) of the study sample

Items		Total sample (n=1726)		RNs (n=676)		Doctors (n=458)		Patients (n=592)	
		n	%	n	%	n	%	n	%
Actual body weight size (n=1657)	Skinny	86	5.2	35	5.4	13	2.9	37	6.7
	Thin	278	16.8	137	20.7	63	14.3	78	14.1
	Slim	353	21.3	180	27.2	71	16.1	102	18.4
	Normal weight	391	23.6	153	23.1	117	26.5	121	21.8
	Overweight	280	16.9	95	14.4	95	21.5	90	16.2
	Fat	178	10.7	40	6.1	50	11.3	88	15.9
	Large	61	3.7	11	1.7	25	5.7	25	4.5
	Obese	30	1.8	9	1.4	7	1.6	14	2.5
Desired body weight size (n=1639)	Skinny	83	5.1	32	4.8	12	2.7	39	7.2
	Thin	399	24.3	209	31.6	92	21.0	98	18.2
	Slim	440	26.8	198	30.0	103	23.5	139	25.8
	Normal weight	479	29.2	133	20.1	155	35.3	191	35.4
	Overweight	190	11.6	69	10.4	60	13.7	61	11.3
	Fat	28	1.7	9	1.4	11	2.5	8	1.5
	Large	6	0.3	2	0.3	4	0.9	0	0.0
	Obese	14	0.8	9	1.4	2	0.5	3	0.6

5.4.3 Exercise barriers and health status

Table 5.5 presents the sample's views regarding the potential barriers to undertaking physical exercise. The results indicated that there were several barriers to exercising. The strongest barriers reported by more than half of the participants were "places to exercise are too far away" (n=1,084, 63.8%), "exercise facilities do not have a convenient schedule for me" (n=1,082, 63.9%) and "there are too few places for me to exercise" (n=941, 55.4%). On the other hand, the least important barriers reported by less than a fifth of the sample were "too embarrassed to exercise" (n=260, 15.2%) and "I think people in exercise clothes look funny" (n=303, 17.9%). The study found that significantly more RNs and patients than the doctors reported barriers to undertaking physical exercise (χ^2=32.948, 2*df*, p<0.001).

For the RNs (See Table 5.5), the strongest exercise barriers reported were “exercise facilities do not have convenient schedules for me” (n=491, 73.3%), “places to exercise are too far away” (n=455, 68.0%) and “doing exercise tires me” (n=334, 49.8%). Whereas the least important reported barriers for the RNs were “I think people in exercise clothes look funny” (n=125, 18.8%) and “too embarrassed to exercise” (n=113, 16.9%).

As indicated in Table 5.5, the doctors reported that the strongest exercise barriers for them were “exercise facilities do not have convenient schedules for me” (n=276, 61.6%), “places to exercise are too far away” (n=274, 60.9%) and “exercise tires me” (n=334, 49.8%). Whereas the least important barriers were “too embarrassed to exercise” (n=43, 9.5%) and “I think people in exercise clothes look funny” (n=49, 10.8%).

As Table 5.5 shows, the patients reported that the strongest exercise barriers for them were “places to exercise are too far away” (n=355, 60.8%), “exercise facilities do not have convenient schedules for me” (n=315, 54.8%) and “exercise tires me” (n=315, 54.0%). Whereas the least important barriers for the patients were “too embarrassed to exercise” (n=104, 18.7%) and “I think people in exercise clothes look funny” (n=129, 22.4%).

Table 5.5: Personal health behaviour data (perceived exercise barriers) of the study sample

Items		Total Sample (n=1726)		RNs (n=676)		Doctors (n=458)		Patients (n=592)	
		n	%	n	%	n	%	n	%
Exercising takes too much of my time (n=1701)	SD	134	7.9	44	6.6	31	6.9	59	10.1
	D	889	52.3	322	48.1	261	58.1	306	52.5
	A	513	30.2	215	32.1	133	29.6	165	28.3
	SA	165	9.7	88	13.2	24	5.3	53	9.1
Exercise tires me (n=1704)	SD	147	8.6	50	7.5	39	8.7	58	9.9
	D	756	44.4	287	42.8	259	57.6	210	36.0
	A	651	38.2	269	40.1	133	29.6	249	42.7
	SA	150	8.8	65	9.7	19	4.2	66	11.3
Places to exercise are too far away (n=1699)	SD	94	5.5	31	4.6	25	5.6	38	6.6
	D	521	30.7	183	27.4	151	33.6	187	32.2
	A	751	44.2	310	46.3	208	46.2	233	40.2
	SA	333	19.6	145	21.7	66	14.7	122	20.6
Too embarrassed to exercise (n=1706)	SD	554	32.5	196	29.4	169	37.3	189	32.3
	D	892	52.3	358	53.7	241	53.2	293	50.0
	A	180	10.6	80	12.0	29	6.4	71	12.1
	SA	80	4.6	33	4.9	14	3.1	33	5.6
It costs too much to exercise (n=1710)	SD	281	16.4	101	15.1	62	13.7	118	20.1
	D	847	49.5	326	48.7	255	56.3	266	45.3
	A	450	26.3	180	26.9	116	25.6	154	26.2
	SA	132	7.7	63	9.4	20	4.4	49	8.3
Exercise facilities do not have convenient schedule for me (n=1692)	SD	114	6.7	41	6.1	25	5.6	48	8.4
	D	496	29.3	138	20.6	147	32.8	211	36.8
	A	765	45.2	309	46.1	217	48.4	239	41.6
	SA	317	18.7	182	27.2	59	13.2	76	13.2
Fatigued by exercise (n=1692)	SD	181	10.7	57	8.5	47	10.5	77	13.4
	D	796	47.0	312	46.7	253	56.5	231	40.1
	A	573	33.9	224	33.5	134	29.9	215	37.3
	SA	142	8.4	75	11.2	14	3.1	53	9.2
My spouse/close friend does not encourage exercising (n=1698)	SD	282	16.6	111	16.5	78	17.3	93	16.2
	D	895	52.7	344	51.2	263	58.3	288	50.1
	A	399	23.5	149	22.2	95	21.1	155	27.0
	SA	122	7.2	68	10.1	15	3.3	39	6.8

SD=strongly disagree, D=disagree, A=Agree, SA=strongly agree

Cont. Table 5.5: Personal health behaviour data (perceived exercise barriers) of the study sample

Items		Total Sample (n=1726)		RNs (n=676)		Doctors (n=458)		Patients (n=592)	
		n	%	n	%	n	%	n	%
My spouse/close friend does not encourage exercising (n=1698)	SD	282	16.6	111	16.5	78	17.3	93	16.2
	D	895	52.7	344	51.2	263	58.3	288	50.1
	A	399	23.5	149	22.2	95	21.1	155	27.0
	SA	122	7.2	68	10.1	15	3.3	39	6.8
Exercise takes too much time from family relationships (n=1694)	SD	174	10.3	54	8.1	40	8.9	80	13.9
	D	895	52.8	312	46.6	272	60.6	311	54.0
	A	511	30.2	230	34.4	124	27.6	157	27.3
	SA	114	6.7	73	10.9	13	2.9	28	4.9
I think people in exercise cloths look funny (n=1691)	SD	430	25.4	153	23.0	137	30.4	140	24.3
	D	958	56.7	388	58.3	264	58.7	306	53.2
	A	222	13.1	81	12.2	38	8.4	103	17.9
	SA	81	4.8	44	6.6	11	2.4	26	4.5
My family members do not encourage me to exercise (n=1697)	SD	306	18.0	114	17.1	97	21.4	95	16.5
	D	938	55.3	347	51.9	278	61.4	313	54.3
	A	357	21.0	157	23.5	67	14.8	133	23.1
	SA	96	5.7	50	7.5	11	2.4	35	6.1
Exercise takes too much time from my family responsibilities (n=1691)	SD	227	13.4	74	11.1	59	13.1	94	16.4
	D	931	55.1	334	50.1	286	63.3	311	54.2
	A	426	25.2	191	28.6	93	20.7	142	24.7
	SA	107	6.3	68	10.2	12	2.7	27	4.7
Exercise is hard work for me (n=1692)	SD	245	14.5	89	13.3	74	16.5	82	14.3
	D	897	53.0	358	53.6	256	57.0	283	49.2
	A	432	25.5	167	25.0	110	24.5	155	27.0
	SA	118	7.0	54	8.1	9	2.0	55	9.6
Too few places for me to exercise (n=1698)	SD	152	9.0	52	7.7	47	10.4	53	9.2
	D	605	35.6	215	32.0	182	40.4	208	36.1
	A	693	40.8	293	43.7	175	38.8	225	39.1
	SA	248	14.6	111	16.5	47	10.4	90	15.6

SD=strongly disagree, D=disagree, A=Agree, SA=strongly agree

5.4.4 Health status

As indicated in Table 5.6, just under two thirds of the sample (n=1043, 61.3%) reported being in good health status, with 32.2% (n=548) reporting being in a very good health status. One fifth of the sample (n=319, 19.7%) reported having long term health problems which limited their physical activity levels.

The majority of the RNs (n=644, 96.7%) reported having a good or very good health status, whereas 9.7% (n=62) reported having health problems which limited their physical activity. The majority of the doctors (n=439, 96.7%) reported having a good or very good health status, whereas 10.7% (n=49) reported having health problems. The majority of the patients (n=508, 87.3%) reported having a good or very good health status, whereas 38.4% (n=208) reported having health problems that limited their physical activity.

Table 5.6: Health status and current health problems of the study sample

Items		Total sample (n=1726)		RNs (n=676)		Doctors (n=458)		Patients (n=592)	
		n	%	n	%	n	%	n	%
Health status (n=1701)	Very poor	15	0.9	3	0.5	2	0.4	10	1.7
	Poor	95	5.6	19	2.9	12	2.6	64	11.0
	Good	1043	61.3	367	55.1	279	61.6	397	68.2
	Very good	548	32.2	277	41.6	160	35.3	111	19.1
Health problems limited physical activity (n=1618)	Yes	319	19.7	62	9.7	49	10.7	208	38.4

5.5 Registered Nurses profile

Table 5.7 shows the professional profile of the RNs (n=676) in the study sample. Comparisons of the RNs' professional, personal and demographic characteristics by gender, age group, healthcare sector, healthcare facility and their personal health behaviours are also presented. The CVD knowledge of the RN participants is also presented and comparisons are made across the RNs' professional, demographic and personal characteristics.

5.5.1 Professional characteristics

As indicated in Table 5.7, the highest proportion of the RNs (n=504, 90.0%) had registered between the years 2000 and 2012. The majority undertook their initial RNs training in Jordan (96.7%, n=647) and had a BSN degree (96.7%, n=647), with 3.3% (n=22) reporting higher qualifications (e.g. MSc). The RNs reported working in both medical (n=182, 28.3%) and surgical (n=197, 31%) wards or in medical-surgical wards (n=161, 25.0%), with 13% (n=85) working in primary healthcare centres. Just over a quarter of the RNs (n=140, 27.4%) had received training in exercise promotion; 19.1% (n=98) had received training in weight management, and 12.0% (n=61) had received training in smoking cessation.

5.5.2 Registered Nurses' demographic, personal and professional data by gender

The following section describes the RNs' demographic, personal and professional characteristics, by gender.

Table 5.7: Registered Nurses' professional characteristics

Items	RNs (n=676)		
	Items	**n**	**%**
RN registration (n=676)	1950-1959	1	0.2
	1980-1989	6	1.2
	1990-1999	49	8.7
	2000-2009	326	58.2
	2010-2012	178	31.8
Initial RN training (n=669)	Jordan	647	96.7
	None-Jordan	22	3.3
Educational qualifications (n=669)	BSN	647	96.7
	MSc	20	3.0
	PhD	2	0.3
Field of clinical practice (n=644)	Medical	182	28.3
	Surgical	197	30.6
	Primary Healthcare centres	85	13.2
	Outpatient-clinic	19	3.0
	Medical & surgical	161	25.0
Training in smoking cessation (n=507)	Yes	61	12.0
Training in exercise promotion (n=511)	Yes	140	27.4
Training in weight management n= (512)	Yes	98	19.1

5.5.2.1 Registered Nurses' age and gender

As Table 5.8 shows, there were significant differences in the RNs' age group and gender. The male RNs were more likely to be younger (20-29 years; n=249, 79.6%) than the female RNs (n=249, 64.3%). In contrast, the female RNs were more likely to be in the middle age group (30-39 years; n=90, 25.3%) and older age group (40 years and over; n=37, 10.4%) compared with the male RNs (n=48, 15.3% and n=16, 5.1%; respectively) (χ^2 =19.256, 2*df*, *p*<0.001).

Table 5.8: Registered Nurses' age and gender

Age group	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
20-29 years	249	79.6	229	64.3	478	71.4
30-39 years	48	15.3	90	25.3	138	20.6
40 years and over	16	5.1	37	10.4	53	7.9
Total	313	100	356	100	669	100

(χ^2 =19.256, 2df, p<0.001)

5.5.2.2 Registered Nurses' nationality and gender

There were no significant differences in the RNs' nationalities by gender.

5.5.2.3 Registered Nurses' field of clinical practice and gender

The findings found statistically significant differences in the field of the RNs' clinical practice in relation to gender (χ^2=48.201, 4*df*, *p*<0.001). The proportion of the male RNs working in medical wards was greater than the female RNs (n=112, 37.6% compared with n=70, 20.3%, respectively). The female RNs (n=70, 20.3%) were more likely to be working in primary healthcare centres (See Table 5.9) than compared to the male RNs (n=15, 5.0%).

Table 5.9: Registered Nurses' field of clinical practice and gender

Field of clinical practice	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
Medical	112	37.6	70	20.3	182	28.3
Surgical	90	30.2	106	30.8	196	30.5
Primary healthcare centre	15	5.0	70	20.3	85	13.2
Outpatient clinic	5	1.7	14	4.1	19	3.0
Medical-surgical	76	25.5	84	24.4	160	24.9
Total	298	100	344	100	642	100

(χ^2 =48.201, 4df, p<0.001)

5.5.2.4 Country of initial Registered Nurse training and gender

Table 5.10 shows that there were significant differences in the country of initial RNs training and gender. The majority of the male and the female RNs had received their RNs training in Jordan (96.7%) and a minority had trained abroad (3.3%). There were more male RNs trained abroad compared to the female RNs (χ^2 =4.127, 1*df*, *p*=0.042).

Table 5.10: Country of initial Registered Nurses' training and gender

Country of initial nurse training	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
Jordan	298	95.2	347	98.0	645	96.7
Abroad	15	4.8	7	2.0	22	3.3
Total	313	100	354	100	667	100

(χ^2 =4.127, 1df, p=0.042)

5.5.2.5 Registered Nurses' qualification and gender

The data showed (See Table 5.11) that the majority of the RNs had a BSN degree with a small number having higher qualifications (i.e. MSc or PhD). There were significantly more female RNs having a BSN degree compared to the male RNs (n=6, 1.7%) (χ^2=6.081, 1*df*, *p*=0.014).

Table 5.11: Registered Nurses' qualification and gender

Qualification	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
BSN	297	94.9	348	98.3	645	96.7
MSc or PhD	16	5.1	6	1.7	22	3.3
Total	313	100	354	100	667	100

(χ^2 =6.081, 1df, p=0.014)

5.5.2.6 Healthcare sector of Registered Nurses and gender

More female RNs were employed in both the public sector (n=152, 42.7%) and the RMS (n=137, 38.5%) compared to the male RNs, while more male RNs worked in the private sector (n=113, 36.0%) compared to the female RNs (n=67, 18.8%) (See Table 5.12) (χ^2 =25.183, 2*df*, *p*<0.001).

Table 5.12: Healthcare sector of Registered Nurses and gender

Healthcare sector	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
Public	102	32.5	152	42.7	254	37.9
Private	113	36.0	67	18.8	180	26.9
RMS	99	31.5	137	38.5	236	35.2
Total	314	100	356	100	670	100

(χ^2 =25.183, 2df, p<0.001)

5.5.2.7 Healthcare facility of Registered Nurses and gender

Table 5.13 indicates that there were significant differences in the gender of the RNs across the different healthcare facilities sampled. A greater proportion of the male RNs (n=260, 82.8%) were working in the general hospitals than compared with the female RNs (n=232, 65.2%); whereas more female RNs (n=70, 19.7%) were employed in primary healthcare centres than compared with the male RNs (n=15, 4.8%) (χ^2=37.114, 2*df*, *p*<0.001).

Table 5.13: Healthcare facility of Registered Nurses and gender

Healthcare facility	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
General hospital	260	82.8	232	65.2	492	73.4
Cardiac institute	39	12.4	54	15.2	93	13.9
Primary healthcare centre	15	4.8	70	19.7	85	12.7
Total	314	100	356	100	670	100

(χ^2 =37.114, 2df, p<0.001)

5.5.2.8 Registered Nurses' training in health promotion and gender

There were no significant differences in the RNs' training in health promotion and gender.

5.5.2.9 Personal health behaviour data and gender

There were no significant differences in the RNs' perceptions of barriers to undertaking exercise in relation to gender. However, in terms of smoking status, more male RNs were smokers and past smokers than the female RNs, while more female RNs reported they never smoked compared to the male RNs (χ^2=131.067, 2*df*, p<0.001). The RNs who perceived their body size as overweight were more likely to be male, while those who perceived their body weight size as below normal were more likely to be female (χ^2=89.510, 2*df*, p<0.001). More female RNs were at the contemplation stage relating to the physical exercise than compared to the male RNs, while more male RNs were at the maintenance stage, compared to the female RNs (χ^2=14.668, 3*df*, p=0.002). In summary, the male RNs were more likely to report being overweight, smoke tobacco (past or present), and maintain physical exercise; whereas the female RNs were more likely to report being underweight, being smokers and to not maintain physical exercise.

5.5.3 Registered Nurses' demographic, personal and professional data by age

The following section describes the RN participants' demographic, personal and professional characteristics in relation to age.

5.5.3.1 Field of clinical practice and age

There were significant differences in the field of clinical practice and the RNs' age (χ^2=82.825, 8*df*, p<0.001). More RNs aged 20-29 years were employed in the medical

(n=147, 31.6%) and the medical-surgical (n=130, 28.0%) wards compared to the RNs in other age groups. Those aged 40 years and over were more likely to be working in the primary healthcare centres (n=21, 42.0%) (See Table 5.14).

Table 5.14: Registered Nurses' field of clinical practice and age

Field of clinical practice	Age group						Total	
	20-29 years		30-39 years		40 years and over			
	n	%	n	%	n	%	n	%
Medical	147	31.6	31	24.2	4	8.0	182	28.3
Surgical	147	31.6	38	29.7	12	24.0	197	30.6
Primary healthcare centre	33	7.1	31	24.2	21	42.0	85	13.2
Outpatient clinic	8	1.7	7	5.5	4	8.0	19	3.0
Medical-surgical	130	28.0	21	16.4	9	18.0	160	24.9
Total	465	100	128	100	50	100	643	100

(χ^2 =82.825, 8df, p<0.001)

5.5.3.2 Registered Nurses' qualification and age

The association between the RNs' qualification and age was significant (χ^2 =18.033, 1*df*, *p*<0.001). Table 5.15 shows that the majority of the younger RNs (aged 20-29 years) held a BSN degree (98.5%), whereas 8% of the older RNs (aged 30 years and over) held an MSc or PhD qualification.

Table 5.15: Registered Nurses' qualification and age

Qualification	Age group				Total	
	20-29 years		30 years and over			
	n	%	n	%	n	%
BSN	473	98.5	173	92.0	646	96.7
MSc or PhD	7	1.5	15	8.0	22	3.3
Total	480	100	136	100	668	100

(χ^2 =18.033, 1df, p<0.001)

5.5.3.3 Healthcare sector of Registered Nurses and age

The association between healthcare sector of the RN participants and age was statistically significant (χ^2=41.577, 4*df*, p<0.001). The RNs aged 40 years and over were more likely to be working in the public sector (n=35, 66.0%) compared with other age groups (See Table 5.16). Those RNs aged 20-29 years were more likely to be employed in both the private sector (n=140, 29.2%) and the RMS (n=193, 40.2%) compared with other age groups.

Table 5.16: Healthcare sector of Registered Nurses and age

Healthcare sector	Age group						Total	
	20-29 years		30-39 years		40 years and over			
	n	%	n	%	n	%	n	%
Public	147	30.6	72	52.2	35	66.0	254	37.9
Private	140	29.2	32	23.2	9	17.0	181	27.0
RMS	193	40.2	34	24.6	9	17.0	236	35.2
Total	380	100	138	100	53	100	671	100

(χ^2 =41.577, 4df, p<0.001)

5.5.3.4 Healthcare facility of Registered Nurses and age

There was a significant association between healthcare facility of the RN participants (i.e. general hospital, cardiac institute, primary healthcare centre) and age (χ^2=62.575, 4*df*, p<0.001). As indicated in Table 5.17, the RNs aged 20-29 years were more likely to be employed in the general hospitals (n=372, 77.5%) and the cardiac institute (n=75, 15.6%) whereas those aged 40 years and over were more likely to be working in the primary healthcare centres (n=21, 39.6%) (χ^2=62.575, 4*df*, p<0.001).

Table 5.17: Healthcare facility of Registered Nurses and age

Healthcare facility	Age group						Total	
	20-29 years		30-39 years		40 years and over			
	n	%	n	%	n	%	n	%
General hospital	372	77.5	92	66.7	29	54.7	492	73.4
Cardiac institute	75	15.6	15	10.9	3	5.7	93	13.9
Primary healthcare centre	33	6.9	31	22.5	21	39.6	85	12.7
Total	480	100	138	100	53	100	671	100

(χ^2 =62.575, 4df, p<0.001)

5.5.3.5 Registered Nurses' training in health promotion and age

There were no significant associations between the RNs' training in weight management and exercise and their age (See Table 5.18). There was a significant association between age and training in smoking cessation, with the older RNs (40 years and over) being more likely to have received training in smoking cessation than the younger RNs (χ^2=14.208, 2*df*, *p*=0.001).

Table 5.18: Registered Nurses' training in smoking cessation and age

Training in smoking cessation	Age group						Total	
	20-29 years		30-39 years		40 years and over			
	n	%	n	%	n	%	n	%
No	330	90.4	90	85.7	25	69.4	445	87.9
Yes	35	9.6	15	14.3	11	30.6	61	12.1
Total	365	100	105	100	36	100	506	100

(χ^2 =14.21, 2df, p<0.001)

5.5.3.6 Personal health behaviour data and age

There were no significant associations between the personal health behaviour data of the RN participants and age.

5.5.4 Registered Nurses' professional and personal health data by healthcare sector

Relationships between the RN participants' demographic, personal and professional characteristics and healthcare sector are described below.

5.5.4.1 Registered Nurses' training in health promotion and healthcare sector

There was a significant difference regarding the RNs' training in smoking cessation and healthcare sector (See Table 5.19). The RNs who received training in smoking cessation were more likely to be working in the private sector (χ^2=7.412, 2*df*, *p*=0.025).

Table 5.19: Registered Nurses' training in smoking cessation and healthcare sector

Training in smoking cessation	Healthcare sector						Total	
	Public		Private		RMS			
	n	%	n	%	n	%	n	%
No	133	78.5	104	81.9	209	91.7	446	88.0
Yes	19	12.5	23	18.1	19	8.3	61	12.0
Total	152	100	127	100	228	100	507	100

(χ^2 =7.412, 2df, p=0.025)

5.5.4.2 Registered Nurses' training in weight management and healthcare sector

There was a significant difference regarding the RNs' training in weight management by healthcare sector. Table 5.20 shows that the RNs who had received training in weight management were more likely to be employed in the public sector and the RMS (χ^2=12.157, 2*df*, *p*=0.002).

Table 5.20: Registered Nurses' training in weight management and healthcare sector

Training in weight management	Healthcare sector						Total	
	Public		Private		RMS			
	n	%	n	%	n	%	n	%
No	120	78.4	116	91.3	178	76.7	414	80.9
Yes	33	21.6	11	8.7	54	23.3	98	19.1
Total	153	100	127	100	232	100	512	100

(χ^2 =12.157, 2df, p=0.002)

5.5.4.3 Registered Nurses' personal health behaviour data and healthcare sector

There were significant differences regarding the RNs' perceptions of their body weight size across the healthcare sectors (χ^2=11.189, 4*df*, *p*=0.018) (See table 5.21). The RNs who perceived their body weight size as below normal were more likely to be employed in the public sector, whereas those who perceived their body size as overweight were more likely to be employed in the private sector (χ^2=11.1883, 4*df*, *p*=0.018).

Table 5.21: Registered Nurses' personal health behaviour data (body weight size) and healthcare sector

Body weight size	Healthcare sector						Total	
	Public		Private		RMS			
	n	%	n	%	n	%	n	%
Below normal	146	58.6	76	43.2	131	55.5	353	53.4
Normal	48	19.3	48	27.3	57	24.2	153	23.1
Overweight	55	22.1	52	29.5	48	20.3	155	23.4
Total	249	100	176	100	236	100	661	100

(χ^2 =11.883, 4df, p=0.018)

5.5.5 Registered Nurses' professional and personal health data by healthcare facility

Relationships between the RN participants' professional characteristics and healthcare facility are presented below.

5.5.5.1 Registered Nurses' training in health promotion and healthcare facility

There was a significant difference regarding the RNs' training in exercise promotion and healthcare sector (χ^2=6.623, 2*df*, *p*=0.036) (See Table 5.22). The RNs who received training in exercise promotion were more likely to be employed in the general hospitals (χ^2=6.623, 2*df*, *p*=0.036) (30.9%), followed by the cardiac institute (23.3%) and then primary healthcare centres (17.9%).

Table 5.22: Registered Nurses' training in exercise promotion and healthcare facility

Training in exercise promotion	Healthcare facility						Total	
	General hospital		Cardiac institute		Primary healthcare centre			
	n	%	n	%	n	%	n	%
No	233	69.1	69	76.7	69	82.1	371	82.1
Yes	104	30.9	21	23.3	15	17.9	140	27.4
Total	337	100	90	100	84	100	511	100

(χ^2 =6.623, 2df, p=0.036)

5.5.5.2 Personal health behaviour data and healthcare facility

There were no significant differences regarding the personal health behaviour data of the RNs across the healthcare facilities.

5.5.6 Registered Nurses' knowledge of CVD

The following section reports the findings regarding the RN participants' knowledge of CVD (i.e. 16 items), and the relationship between the RN participants' knowledge of CVD and demographic, and personal and professional characteristics are also reported.

5.5.6.1 Total level of CVD knowledge among the Registered Nurses participants

The average knowledge score for the RN participants was 81% (M= 13.08%, SD. 2.08). The total knowledge score of the RNs was high, regardless of their gender, age, qualifications, field of clinical practice or healthcare sector. However, there were significant differences in the RNs' CVD knowledge score across healthcare facilities (p=.001). The RNs who worked in the cardiac institute and the primary healthcare centres had a higher CVD knowledge score compared with those working in the general hospitals (H=14.432, 2df, p=0.001).

The RNs' knowledge score of CVD was not significantly related to their smoking status, perceived body weight size, or perceptions of exercise barriers. However, those RNs who were at the pre-contemplation stage reported a significantly lower CVD knowledge score than compared with those who were at the contemplation, action and maintenance stages relating to their physical exercise (H=23.264, 3df, p<0.001).

5.5.6.2 CVD knowledge items

The frequency and percentage of correct CVD knowledge items is presented in Table 5.23. Most of the RNs (81%) answered 13 out of 16 items correctly. Just over two thirds (68.6%) of the RNs answered over 80% of the items correctly; 28.7% (n=194) of the RNs answered between 50%-80% of the items correctly; and 2.7% (n=18) answered below 50% of items correctly. The most frequent item correctly answered by the RNs was related to cholesterol level and developing heart disease (97%, n=655). The item with the lowest frequency of correct answers was related to walking and heavy housework and preventing the development of heart disease (53%, n=359).

Table 5.23: Registered Nurses' knowledge of CVD items

Items	Correct knowledge items	
	n	%
Cholesterol level and developing heart disease (n=675)	655	97.0
Keeping blood pressure under control and developing heart disease (n=676)	650	96.2
Overweight and developing heart disease (n= 674)	646	95.8
Smoking and developing heart disease (n= 676)	643	95.1
Bad cholesterol (LDL) and developing heart disease (n=673)	638	94.8
High blood pressure and developing heart disease (n=676)	640	94.7
Fatty foods and developing heart disease (n=674)	614	91.1
Family history and developing of heart disease (n=673)	609	90.5
Regular exercise and developing heart disease (n= 675)	602	89.2
Stop smoking and developing heart disease (n=673)	580	86.2
Diabetes and developing heart disease (n=674)	505	74.9
Good cholesterol (HDL) and developing heart disease (n= 549)	384	69.9
Exercising in a gym or exercise class and developing heart disease (n=673)	458	68.1
Age and developing heart disease (n= 672)	456	67.9
A person always knows when s/he has heart disease (n= 661)	404	61.1
Walking and heavy housework and developing heart disease (n= 674)	359	53.3

5.5.6.3 Registered Nurses' knowledge of CVD by demographic, personal and professional data

This section presents the findings of the level of RNs' CVD knowledge in relation to their demographic, personal and professional characteristics.

5.5.6.3.1 Knowledge of CVD items and healthcare sector

The RNs who worked in the public sector achieved lower percentage correct scores for the CVD knowledge item of "age and developing heart disease" (χ^2=13.449, 2*df*, p<0.001) compared to the RNs employed in the other healthcare sectors. The RNs who

were recruited from the private sector achieved lower percentage correct scores for the two CVD knowledge items of "regular exercise and developing heart disease" (χ^2=7.04, 2*df*, *p*=0.030) and "bad cholesterol (LDL) and developing heart disease" (χ^2=6.38, 2*df*, *p*=0.041), whereas those RNs working in the private sector reported higher knowledge for the item of "good cholesterol (HDL) and developing heart disease" (χ^2=9.652, 2*df*, *p*=0.008) compared to those employed in the other healthcare sectors (See Table 5.24).

Table 5.24: Registered Nurses' knowledge of CVD items and healthcare sector

Items		Healthcare sector						Total		2*df*
		Public (n= 254)		Private (n= 184)		RMS (n= 238)				
		n	%	n	%	n	%	n	%	
Regular exercise and developing heart disease (n= 675)	C	225	88.9	156	84.8	221	92.9	602	89.2	χ^2 =7.041 *p*=0.030
Bad cholesterol (LDL) and developing heart disease (n= 673)	C	243	96.4	168	91.3	227	95.8	638	94.8	χ^2 =6.378 *p* =0.041
Good cholesterol (HDL) and developing heart disease (n= 549)	C	126	68.5	104	80.6	154	65.3	384	69.9	χ^2 =9.652 *p* =0.008
Age and developing heart disease (n=672)	C	151	59.9	140	76.1	165	69.9	456	67.9	χ^2 =13.449 *p* =0.001

C= Correct

5.5.6.3.2 Knowledge of CVD items and field of clinical practice

The findings revealed that the RNs who worked in the primary healthcare centres possessed significantly higher CVD knowledge regarding two items, namely: "a person always knows when s/he has heart disease" (χ^2=15.070, 4*df*, *p*=0.005) and "walking and heavy housework and developing heart disease" (χ^2=9.710, 4*df*, *p*=0.046) compared to those who worked in the other fields of clinical practice (See Table 5.25). The RNs who were employed in the surgical wards reported less knowledge in the item "exercising in

a gym or exercise class and developing heart disease" (χ^2=9.479, 4*df*, *p*=0.050) compared to the other RNs.

Table 5.25: Registered Nurses' knowledge of CVD items and field of clinical practice

Items		Field of clinical practice										Total		4*df*
		Medical (n= 182)		Surgical (n= 197)		Primary healthcare centre (n= 85)		Outpatient -clinic (n=19)		Medical-Surgical (n=161)				
		n	%	n	%	n	%	n	%	n	%	n	%	
A person always knows when s/he has heart disease (n= 631)	C	105	59.3	120	61.5	66	78.6	10	55.6	84	53.5	385	61.0	χ^2=15.070 *p* =0.005
Exercising in a gym or exercise class and developing heart disease (n=642)	C	127	70.2	119	60.7	64	75.3	15	78.9	116	72.0	441	68.7	χ^2=9.479 *p* =0.050
Walking and heavy housework and developing heart disease (n=642)	C	87	47.8	110	55.8	57	67.1	9	50.0	81	50.6	344	53.6	χ^2=9.710 *p* =0.046

C= Correct

5.5.6.3.3 Knowledge of CVD items and gender

As Table 5.26 shows, the male RN participants had higher knowledge of CVD in the items of "diabetes and developing heart disease" (χ^2=8.594, 1*df*, *p*=0.003) and "age and developing heart disease" (χ^2=4.691, 1*df*, *p*=0.030) compared to the female RNs. In contrast, the female RNs reported higher knowledge of CVD about "keeping blood pressure under control and developing heart disease" (χ^2=5.44, 1*df*, *p*=0.020) and "walking and heavy housework and developing heart disease" (χ^2=3.927, 1*df*, *p*=0.048) compared to the male RNs.

Table 5.26: Registered Nurses' knowledge of CVD items and gender

Items		Gender				Total		1*df*
		Male (n= 314)		Female (n= 356)				
		n	%	n	%	n	%	
Keeping blood pressure under control and developing heart disease (n=670)	C	296	94.3	348	97.8	644	96.1	χ^2 =5.433 *p*=0.026
Diabetes and developing heart disease (n=668)	C	251	79.9	248	70.1	499	74.7	χ^2 =8.594 *p*=0.003
Age and developing heart disease (n= 666)	C	225	71.9	226	64.0	451	67.7	χ^2 =4.691 *p*=0.030
Walking and heavy housework and developing heart disease (n= 668)	C	155	49.5	203	57.2	358	53.6	χ^2 =3.927 *p*=0.048

C= Correct

5.5.6.3.4 Registered Nurses' knowledge of CVD items and age

As indicated in Table 5.27, the younger RNs (20-29 years) reported higher CVD knowledge in the item of "being overweight and developing heart disease" (χ^2=9.634, 2*df*, p=0.008) compared with the other age groups. The RNs in the middle age group (30-39 years) reported less knowledge about "keeping blood pressure under control and developing heart disease" (χ^2=11.048, p=0.004). The older RNs (40-49 years and over) reported less knowledge about "age and developing heart disease" (χ^2=6.956, 2*df*, *p*=0.031) compared with the younger RNs.

Table 5.27: Registered Nurses' knowledge of CVD items and age

Items		Age group						Total		2*df*
		20-29 years (n= 480)		30-39 years (n= 138)		40 years and over (n= 53)				
		n	%	n	%	n	%	n	%	
Keeping blood pressure under control and developing heart disease (n=676)	C	468	97.5	126	91.3	51	96.2	645	96.1	χ^2=11.048 *p*=0.004
Being overweight and developing heart disease (n=669)	C	466	97.3	128	92.8	47	90.4	641	95.8	χ^2=9.634 *p*=0.008
Age and developing heart disease (n=667)	C	327	68.4	98	71.5	27	51.9	452	67.8	χ^2=6.956 *p*=0.031

C= Correct

5.5.6.3.5 Registered Nurses' knowledge of CVD items and smoking cessation training

The RNs who had received training in smoking cessation reported significantly less CVD knowledge in two items, namely; "a person always knows when s/he has heart disease" (χ^2=8.859, 1*df*, *p*=0.003) and "family history and developing heart disease" (χ^2=4.786, 1*df*, *p*=0.029) compared to those who did not receive training (See Table 5.28).

Table 5.28: Registered Nurses' knowledge of CVD items and training in smoking cessation

Items		Nursing training in smoking cessation				Total		1*df*
		No (n=446)		Yes (n=61)				
		n	%	n	%	n	%	
A person always knows when s/he has heart disease (n= 494)	C	279	64.1	26	44.1	305	61.7	χ^2=8.859 *p*=0.003
Family history and developing heart disease (n=505)	C	409	92.1	51	83.6	460	91.1	χ^2=4.786 *p*=0.029

C= Correct

5.5.6.3.6 Registered Nurses' knowledge of CVD items and exercise promotion training

The findings found no differences between the RN participants' CVD knowledge relating to their training in exercise promotion.

5.5.6.3.7 Registered Nurses' knowledge of CVD items and weight management training

The RNs who had received training in weight management reported less CVD knowledge regarding the item "age and developing heart disease", compared with the other RNs (χ^2=3.840, 1*df*, *p*=0.050) (See Table 5.29).

Table 5.29: Registered Nurses' knowledge of CVD items and training in weight management

Items		Nursing training in weight management				Total		1*df*
		No (n=414)		Yes (n=98)				
		n	%	n	%	n	%	
Age and developing heart disease (n=508)	C	292	71.0	59	60.8	351	69.1	χ^2 =3.840 p=0.050

C= Correct

5.5.6.3.8 Registered Nurses' knowledge of CVD and personal health behaviour data

There were no significant differences regarding the RNs' smoking status and their knowledge of CVD items. However, the RNs who perceived their body size as overweight had less CVD knowledge related to three items compared to those with normal body weight size or below normal body weight size (e.g. "stop smoking and developing heart disease"; χ^2=11.681, 2*df*, *p*=0.003).

The RNs who perceived fewer barriers to their doing exercise had higher CVD knowledge, than those who perceived more barriers to doing exercise (e.g. "keeping blood pressure under control and developing heart disease"; χ^2=4.199, 1*df*, *p*=0.040). This finding suggests that a better knowledge of CVD risk factors is associated with more positive views towards doing physical exercise. In addition, the RNs who were at the contemplation stage relating to doing physical exercise had higher CVD knowledge compared to those who were at the pre-contemplation stage (e.g. "stop smoking and developing heart disease"; χ^2=14.953, 3*df*, *p*=0.002).

5.6 Doctor profile

The following section presents the professional characteristics of the doctor participants (n=458). The description of the doctors' demographic, personal and professional data is provided in relation to gender, age group and personal health behaviour data.

5.6.1 Professional characteristics

As Table 5.30 shows, the highest proportion of the doctors were registered between the years 2000 and 2009 (n=159, 38.7%) with just under one third registering between the years 2010 and 2012 (n=124, 30.2%) and 31% (n=128) registering between the years 1960 and 1999. The majority of the doctor participants (n=262, 58.1%) trained abroad; whereas 41.9% (n=189) trained in Jordan. Nearly half of the doctors (49.2%) were resident doctors, over one fifth were specialists (n=98, 21.8%), followed by general practitioners (n=65, 14.5%), consultants (n=41, 9.1%) and then registrars (n=24, 5.3%).

Table 5.30: Doctors' professional characteristics

Items	Professional data (n=458)		
	Items	**n**	**%**
Doctor registration (n=411)	Pre 1980	14	3.2
	1980-1989	69	16.8
	1990-1999	45	10.9
	2000-2009	159	38.7
	2010-2012	124	30.2
Country of certification (n=451)	Jordan	189	41.9
	None-Jordan	262	58.1
Doctor clinical practice (n=449)	Resident	221	49.2
	Specialist	98	21.8
	Registrar	24	5.3
	Consultant	41	9.1
	General practitioner	65	14.5
Speciality country (n=139)	Jordan	87	63.5
	None-Jordan	50	36.5

5.6.2 Doctors' demographic, personal and professional data by gender

The relationship between demographic, personal and professional characteristics of the doctor participants is presented below in relation to gender.

5.6.2.1 Doctors' age group and gender

There were no significant differences in the doctors' age in relation to gender.

5.6.2.2 Doctors' nationality and gender

More male doctors than female doctors were Jordanian (See Table 5.31). These differences were statistically significant (χ^2 =6.334, 2*df*, *p*=0.012).

Table 5.31: Doctors' nationality and gender

Nationality	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
Jordanian	315	91.6	88	83.0	403	89.6
Non-Jordanian	29	8.4	18	17.0	47	10.4
Total	344	100	106	100	450	100

(χ^2 =6.334, 2df, p=0.012)

5.6.2.3 Doctors' field of clinical practice and gender

As indicated in Table 5.32, there were significant differences in the doctors' field of clinical practice in relation to gender (χ^2=35.742, 4*df*, *p0*<.*0*01). The male doctors were more likely to be specialists (n=83, 24.1%) and consultants (n=39, 11.3%) whereas the female doctors were more likely to be GPs (n=32, 30.5%).

Table 5.32: Doctors' field of clinical practice and gender

Field of clinical practice	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
Resident	170	49.4	51	48.6	221	49.2
Specialist	83	24.1	15	14.3	98	21.8
Registrar	19	5.5	5	4.8	24	5.3
Consultant	39	11.3	2	1.9	41	9.1
GP	33	9.6	32	30.5	65	14.5
Total	344	100	105	100	449	100

(χ^2 =35.742, 4df, p<0.001)

5.6.2.4 Medical training and gender

The findings revealed that the female doctors were more likely to have trained in Jordan (n=59, 56.2%) (See Table 5.33); whereas the male doctors were more likely to have trained abroad (n=216, 62.4%) (χ^2=11.470, 1*df*, *p*=0.001).

Table 5.33: Medical training and gender

Medical training	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
Jordan	130	37.6	59	56.2	189	41.9
Non- Jordanian	216	62.4	46	43.8	262	58.1
Total	346	100	105	100	451	100

(χ^2=11.470, 1df, p=0.001)

5.6.2.5 Doctors' speciality and gender

There were no significant differences in the gender of the doctors relating to medical speciality.

5.6.2.6 Healthcare sector of doctors and gender

There were no significant differences in the doctors' gender across the three healthcare sectors.

5.6.2.7 Healthcare facility of doctors and gender

As Table 5.34 shows, there were significant differences in the gender of the doctor participants across the different healthcare facilities (χ^2 =24.214, 2*df*, p<0.001). More male doctors were working in the general hospitals and the cardiac institute than were female doctors. In contrast, more female doctors were employed in the primary healthcare centres compared with the male doctors.

Table 5.34: Healthcare facility of doctors and gender

Healthcare facility	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
General hospital	279	80.6	66	61.1	345	76.0
Cardiac institute	21	6.1	5	4.6	26	5.7
Primary healthcare centre	46	13.3	37	34.3	83	18.3
Total	346	100	108	100	454	100

(χ^2 =24.214, 2df, p<0.001)

5.6.2.8 Personal health behaviour data of doctors and gender

There were no significant differences in the Stages of Change relating to physical exercise and perceptions of exercise barriers by the doctors in relation to their gender. In

relation to smoking status, more male doctors significantly reported being currently smokers and having a history of smoking than the female doctors (χ^2=46.661, 2*df*, p<0.001). In relation to perceived body weight, the doctors who perceived their body size as overweight were more likely to be male, while those who perceived their body weight size below normal were more likely to be female (χ^2=55.829, 2*df*, p<0.001).

5.6.3 Doctors' demographic, personal and professional data by age

The relationships between the doctor participants' demographic, personal and professional characteristics and age are presented below.

5.6.3.1 Doctors' field of clinical practice and age

There was a significant relationship between the doctors' field of clinical practice and age. As Table 5.35 shows, the resident doctors and registrars were significantly more likely to be aged 20-29 years. The specialist doctors were more likely to be aged 30 years and over, while the consultants were more likely to be aged 40 years and over (χ^2=304.128, 8*df*, p<0.001).

Table 5.35: Doctors' field of clinical practice and age

Field of clinical practice	Age group						Total	
	20-29 years		30-39 years		40 years and over			
	n	%	n	%	n	%	n	%
Resident	152	80.4	60	48.8	9	6.6	221	49.2
Specialist	1	0.5	48	39.0	49	35.8	98	21.8
Registrar	24	12.7	0	0	0	0	24	5.3
Consultant	0	0	1	0.8	40	29.2	41	9.1
GP	12	6.3	14	11.4	39	28.5	65	14.5
Total	189	100	123	100	137	100	449	100

(χ^2=304.13, 8df, p<0.001)

5.6.3.2 Doctors' nationality and age

There was a significant relationship between the doctors' nationality and age (χ^2=6.049, 2*df*, *p*=.049). As indicated in Table (5.36), the older doctors (aged 40 years and over) were significantly more likely to be Jordanian than the younger doctors (20-39 years).

Table 5.36: Doctors' nationality and age

Nationality	Age group						Total	
	20-29 years		30-39 years		40 years and over			
	n	%	n	%	n	%	n	%
Jordanian	163	85.8	111	90.2	129	94.2	403	89.6
Non-Jordanian	27	14.2	12	9.8	8	5.8	47	10.4
Total	190	100	123	100	137	100	450	100

(χ^2=6.049, 2df, p=0.049)

5.6.3.3 Medical training and age

As Table 5.37 shows, the younger doctors (20-29 years) were significantly more likely to be trained in Jordan (n=117, 61.3%), whereas the older doctors (40 years and over) were more likely to have been trained abroad (n=110, 80.3%) (χ^2 =58.537, 2*df*, *p*<0.001).

Table 5.37: Doctors' medical training and age

Medical training	Age group						Total	
	20-29 years		30-39 years		40 years and over			
	n	%	n	%	n	%	n	%
Jordan	117	61.3	45	36.6	27	19.7	189	41.9
Non- Jordanian	74	38.7	78	63.4	110	80.3	262	58.1
Total	191	100	123	100	137	100	451	100

(χ^2=58.537, 2df, p<0.001)

5.6.3.4 Doctors' speciality country and age

The doctors aged 40 years and over were significantly more likely to have specialised abroad (n=39, 48.1%) (See Table 5.38), whereas the younger (20-29 years) and middle (30-39 years) age groups were more likely to have specialised in Jordan (χ^2=11.621, 2*df*, *p*=0.003).

Table 5.38: Doctors' speciality country and age

Speciality country	Age group						Total	
	20-29 years		30-39 years		40 years and over			
	n	%	n	%	n	%	n	%
Jordan	9	81.8	36	80.0	42	51.9	87	63.5
Non- Jordanian	2	18.2	9	20.0	39	48.1	50	36.5
Total	11	100	45	100	81	100	137	100

(χ^2=11.621, 2df, p=0.003)

5.6.3.5 Healthcare sector of doctors and age

As indicated in Table 5.39, the younger doctors (20-29 years) were significantly more likely to be working in the private sector (n=74, 38.3%), while the older doctors (40 years and over) were more likely to be employed in the public sector (n=94, 68.6%). The doctors aged 40 years and over were less likely to be working in the RMS (n=19, 13.9%) (χ^2=55.476, 4*df*, *p*<0.001).

Table 5.39: Healthcare sector of doctors and age

Healthcare sector	Age group						Total	
	20-29 years		30-39 years		40 years and over			
	n	%	n	%	n	%	n	%
Public	56	29.0	63	50.8	94	68.6	213	46.9
Private	74	38.3	24	19.4	24	17.5	122	26.9
RMS	63	32.6	37	29.8	19	13.9	119	26.2
Total	193	100	124	100	137	100	454	100

(χ^2=55.476, 4df, p<0.001)

5.6.3.6 Healthcare facility of doctors and age

The younger doctors (20-29 years) were significantly more likely to be working in the general hospitals (n=178, 92.2%) than the other doctor age groups (See Table 5.40). The middle aged doctors (30-39 years) were more likely to be employed in the cardiac institute (n=14, 11.3%) and primary healthcare centres (n=15, 21.1%) (χ^2=85.558, 4*df*, *p*<0.001). The older doctors (40 years and over) were more likely to be employed in the primary healthcare centres (n=56, 40.9%) compared to the other doctor age groups.

Table 5.40: Healthcare facility of doctors and age

Healthcare facility	Age group						Total	
	20-29 years		30-39 years		40 years and over			
	n	%	n	%	n	%	n	%
General hospital	178	92.2	95	76.6	72	52.6	345	76
Cardiac institute	3	1.6	14	11.3	9	6.6	26	5.7
Primary healthcare centre	12	6.2	15	21.1	56	40.9	83	18.3
Total	193	100	124	100	137	100	454	100

(χ2 =85.558, 4df, p<0.001)

5.6.3.7 Personal health behaviour data of doctors and age

There were no significant relationships between the health personal behaviour data of the doctors by gender. However, the younger doctors (20-29 years) were more likely to perceive they have normal and below body weight size, whereas the older doctors were more likely to perceive they have overweight body size (χ^2=15.236, 4*df*, *p*=0.004).

5.7 Patient profile

The relationships between the personal characteristics of the patients in relations to gender, age, qualifications, diagnosis of heart disease and personal health behaviour data are reported below.

5.7.1 Personal characteristics

As Table 5.41 shows, 41.9% (n=242) of the patient participants completed their college/university or higher education, with 36.6% having finished their high school (n=283) and 5.9% (n=34) having finished their primary school. Just under one third of the patients reported having heart disease (n=186, 32.0%); over one third reported being employed (n=225, 38.8%); the majority were married (n=430, 73.5%) with just over one fifth single (n=122, 20.9%); thirty-eight percent of the patient participants (n=215) knew the difference between a RN and a practical nurse.

Table 5.41: Patients' personal characteristics

Items	Patients (n=592)		
	Items	**n**	**%**
Qualification (n=580)	Illiterate	20	3.4
	Primary school	34	5.9
	Middle school	71	12.2
	High school	212	36.6
	College/ university/ or more	242	41.9
Diagnosed with heart disease (n=581)	Yes	186	32.0
Employment (n=580)	Yes	225	38.8
Marital status (n=585)	Single	122	20.9
	Married	430	73.5
	Widowed	17	2.9
	Divorced	16	2.7
Knowledge of the difference between RNs and practical nurses (n=555)	Yes	215	38.7

5.7.2 Patients' characteristics by gender, age, qualifications and diagnosis with heart disease

The relationship between characteristics of the patient participants is presented below in relation to gender, age, qualifications and diagnosis with heart disease.

5.7.2.1 Patients' age and gender

There were no significant differences in the patients' gender and age.

5.7.2.2 Patients' nationality and gender

As indicated in Table 5.42, the majority of the patient participants were Jordanian. The female patients were significantly more likely to be Jordanian (n=223, n=90.7%), than the male patients (n=272, 84.7%) (χ^2=4.396, 1*df*, *p*=0.036).

Table 5.42: Patients' nationality and gender

Nationality	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
Jordanian	272	84.7	223	90.7	495	87.3
Non-Jordanian	49	15.3	23	9.3	72	12.7
Total	321	100	246	100	567	100

(χ^2 =4.396, 1df, p=0.036)

5.7.2.3 Patients' qualification and gender

There were no significant differences in the patients' qualification by gender.

5.7.2.4 Diagnosis with heart disease and gender

The male patients in this sample (n=119, 35.8%) were significantly more likely to be diagnosed with heart disease than the female patients (See Table 5.43) (χ^2 =5.220, 1*df, p*=0.022).

Table 5.43: Patients' diagnosis with heart disease and gender

Diagnosis with heart disease	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
Yes	119	35.8	67	26.9	186	32.0
No	213	64.2	182	73.1	395	68.0
Total	332	100	249	100	581	100

(χ^2 =5.220, 1df, p=0.022)

5.7.2.5 Patients' marital status and gender

As presented in Table 5.44, most of the patients were married (n=430, 73.5%). The male patients were significantly more likely to be married than the female patients, whereas the female patients were more likely to be widowed (n=14, 5.6%) or divorced (n=11, 4.4%) compared to the male patients (χ^2 =16.396, 3*df*, *p*=0.001).

Table 5.44: Patients' marital status and gender

Marital status	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
Single	72	21.4	50	20.1	122	20.9
Married	256	76.2	174	69.9	430	73.5
Widowed	3	0.9	14	5.6	17	2.9
Divorced	5	1.5	11	4.4	16	2.7
Total	336	100	249	100	585	100

(χ^2 =16.396, 3df, p=0.001)

5.7.2.6 Patients' employment and gender

A much larger proportion of the male patients were employed (n=166, 49.5%) than compared to the female patients (n=59, 23.9%) (See Table 5.45), and this difference was statistically significant (χ^2=40.260, 1*df*, *p*<0.001).

Table 5.45: Patients' employment and gender

Employment	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
Yes	166	49.8	59	23.9	225	38.8
No	167	50.2	188	76.1	355	61.2
Total	344	100	106	100	450	100

(χ^2 =40.260, 1df, p<0.001)

5.7.2.7 Patients' knowledge of the difference between RNs and practical nurses and gender

There were no significant differences between the male and female patients regarding their knowledge of the difference between a RN and a practical nurse.

5.7.2.8 Healthcare sector of patients and gender

Table 5.46 shows that the female patients in this study were more likely to be recruited from the public sector, whereas the male patients were more likely to be recruited from both the private sector and the RMS *(χ^2* =7.431, 2*df, p*=0.024*)*.

Table 5.46: Healthcare sector of patients and gender

Healthcare sector	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
Public	114	33.9	112	45.0	38.6	226
Private	99	29.5	63	25.3	162	27.7
RMS	123	36.6	74	29.7	197	33.7
Total	336	100	249	100	585	100

(χ^2 =7.431, 2df, p=0.024)

5.7.2.9 Healthcare facility of patients and gender

As shown in Table 5.47, the majority of the patient participants were recruited from the general hospitals. The male patients were significantly more likely to be recruited from the cardiac institute and the female patients were more likely to be recruited from the primary healthcare sectors (χ^2=7.2539, 2*df*, *p*=0.023).

Table 5.47: Healthcare facility of patients and gender

Healthcare facility	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
General hospital	253	75.3	191	76.7	444	75.9
Cardiac institute	48	14.3	20	8.0	68	11.6
Primary healthcare centre	35	10.4	38	15.3	73	12.5
Total	336	100	249	100	585	100

(χ^2 =7.2539, 2df, p=0.023)

5.7.2.10 Personal health behaviour data of patients and gender

There were no significant gender differences across the range of the patients' personal health behaviour data in relation to gender. However, in relation to the smoking status, significantly more male patients than female patients reported being currently smokers; and males were more likely to have smoked in the past; whereas more female patients than male patients reported having never smoked (χ^2 =61.866, 2*df*, *p*<0.001).

5.7.2.11 Patients' qualification and age

The findings showed that there were significant differences in the patients' qualification by age group (χ^2=52.318, 12*df*, *p*<0.001). The younger patients (aged 20-29 years) were significantly more likely to have college/university/more educational qualifications

(n=67, 50.4%); whereas the middle aged patients (aged 30-39 years) were more likely to have completed their high school education (n=72, 48.6%). The majority of the sample can be described as well-educated, for example, 42.1% of the total patients have completed college (See Table 5.48). A small minority of the patient participants described themselves as illiterate (3.5%); and illiteracy was more common (10.1%) among those over 50 years.

Table 5.48: Patients' qualification and age

Qualification	Age group								Total	
	20-29 years		30-39 years		40-49 years		50 years and over			
	n	%	n	%	n	%	n	%	n	%
Illiterate	2	1.5	3	2.0	1	0.7	14	10.1	20	3.5
Primary school	7	5.3	2	1.4	9	5.9	16	11.5	34	5.9
Middle school	18	13.5	15	10.1	17	11.1	19	13.7	69	12.0
High school	39	29.3	72	48.6	61	39.9	37	26.6	209	36.5
College/university/more	67	50.4	56	37.8	65	42.5	53	38.1	241	42.1
Total	133	100	148	100	153	100	139	100	573	100

(χ^2 =52.318, 12df, p<0.001)

5.7.2.12 Patients' diagnosis with heart disease and age

As shown in Table 5.49, the older patients (aged 50 years and over) were significantly more likely to report a diagnosis of heart disease (n=80, 57.1%) than younger patients, and there is a very clear trend for diagnosis of heart disease to increase with age among these patients (χ^2 =74.479, 3*df*, *p*<0.001).

Table 5.49: Patients' diagnosis with heart disease and age

Patients' diagnosis with heart disease	Age group								Total	
	20-29 years		30-39 years		40-49 years		50 years and over			
	n	%	n	%	n	%	n	%	n	%
Yes	15	11.4	33	22.3	57	37.3	80	57.1	185	32.3
No	117	88.6	115	77.7	96	62.7	60	42.9	388	67.7
Total	132	100	148	100	153	100	140	100	573	100

(χ^2 =74.479, 3df, p<0.001)

5.7.2.13 Patients' employment and age

In terms of employment, the patient participants aged 50 years and over were significantly more likely to be unemployed (n=108, 78.3%), whereas the middle aged patients (30-39 years) were more likely to be employed (n=74, 49.7%) (Table 5.50) (χ^2=25.319, *3df, p*<0.001).

Table 5.50: Patients' employment and age

Employment	Age group								Total	
	20-29 years		30-39 years		40-49 years		50 years and over			
	n	%	n	%	n	%	n	%	n	%
Yes	55	41.7	74	49.7	64	41.8	30	21.7	223	39.0
No	77	58.3	75	50.3	89	58.2	108	78.3	349	61.0
Total	132	100	149	100	153	100	138	100	572	100

(χ^2 =25.319, 3df, p<0.001)

5.7.2.14 Patients' knowledge of the difference between Registered Nurses and practical nurses and age

There were no significant differences in the patient participants' age in relation to their knowledge of the difference between a RN and a practical nurse.

5.7.2.15 Healthcare sector of patients and age

The healthcare sector of the patients varied significantly by age (χ^2=29.252, 6*df*, p<0.001). As Table 5.51 shows, the patients aged 40 years and over were more likely to be recruited from the RMS than compared with the patients aged 20-39 years. The middle aged patients (30-39 years) were more likely to be recruited from the private sector, whereas the younger (20-29 years) and the older (50 years and over) patients were more likely to be recruited from the public sector.

Table 5.51: Healthcare sector of patients and age

Healthcare sector	Age group								Total	
	20-29 years		30-39 years		40-49 years		50 years and over			
	n	%	n	%	n	%	n	%	n	%
Public	61	45.9	46	30.9	51	33.1	62	44.0	220	38.1
Private	45	33.8	53	35.6	38	24.7	24	17.0	160	27.7
RMS	27	20.3	50	33.6	65	42.2	55	39.0	197	34.1
Total	133	100	149	100	154	100	141	100	577	100

(χ^2 =29.252, 6df, p<0.001)

5.7.2.16 Healthcare facility of patients and age

The healthcare facility of the patients also varied significantly by age (χ^2 =22.616, 6*df*, p=0.001). As Table 5.52 shows, all the patient age groups were more likely to be recruited from the general hospitals (range: 71.6% to 80.5%). Among the remaining sample, the younger patients (20-29 years) were more likely to be recruited from primary healthcare centres while the older patients (40 years and over) were more likely to be recruited from the cardiac institute (n=27, 19.1%) (χ^2 =22.616, 6*df*, p=0.001).

Table 5.52: Healthcare facility of patients and age

Healthcare facility	Age group								Total	
	20-29 years		30-39 years		40-49 years		50 years and over			
	n	%	n	%	n	%	n	%	n	%
General hospital	107	80.5	116	77.9	115	74.7	101	71.6	439	76.1
Cardiac institute	3	2.3	16	10.7	22	14.3	27	19.1	68	11.8
Primary healthcare centre	23	17.3	17	11.4	17	11.0	13	9.2	70	12.1
Total	133	100	149	100	154	100	141	100	577	100

(χ^2 =22.616, 6df, p=0.001)

5.7.2.17 Personal health behaviour data of patients and age

There were no significant variations by age across most of the patients' personal health behaviour data. However, smoking status varied significantly by age (χ^2 =17.696, 6*df*, *p*=0.007). The younger patients (20-29 years) were more likely to have never smoked; the middle aged patients (30-39 years) were more likely to be current smokers; and the older patients (50 years and over) were more likely to have smoked in the past. Barriers to undertaking exercise also varied significantly by age (χ^2 =31.422, 6*df*, *p*<0.001). The middle aged patients (30-39 years) were more likely to report having fewer barriers to undertaking exercise than compared with the other age groups.

5.7.2.18 Patients' diagnosis with heart disease and qualification

There were significant variations in the diagnosis of heart disease based on the patients' qualifications (χ^2 =10.048, 4*df*, *p*=.040). Table 5.53 shows that the illiterate patients and those who had completed primary school were more likely to have been diagnosed with heart disease, as a larger percentage of these age groups answered 'yes' compared to

more highly educated groups. These findings suggest that there is a link between education level and heart disease, with the lower educated patients more at risk of CVD.

Table: 5.53: Patients' diagnosis with heart disease and qualification

Diagnosis with heart disease	Qualification										Total	
	Illiterate		Primary school		Middle school		High school		College/ university/ more			
	n	%	n	%	n	%	n	%	n	%	n	%
Yes	10	50.0	17	50.0	24	33.8	62	29.7	69	28.5	182	31.6
No	10	50.0	17	50.0	47	66.2	147	70.3	173	71.5	394	68.4
Total	20	100	34	100	71	100	209	100	242	100	576	100

(χ^2 =10.048, 4df, p=0.040)

5.7.2.19 Patients' employment and qualification

As indicated in Table 5.54, the patients with higher qualifications were more likely to be employed (n=126, 52.1%) (χ^2=35.469, 4*df*, *p*<0.001).

Table: 5.54: Patients' employment and qualification

Employment	Qualification										Total	
	Illiterate		Primary school		Middle school		High school		College/ university/ more			
	n	%	n	%	n	%	n	%	n	%	n	%
Yes	4	21.1	17	21.2	17	24.3	67	31.8	126	52.1	221	38.4
No	15	78.9	26	78.8	53	75.5	144	68.2	116	47.9	354	61.6
Total	19	100	33	100	70	100	211	100	242	100	575	100

(χ^2 =35.469, 4df, p<0.001)

5.7.2.20 Patients' knowledge of the difference between Registered Nurses and practical nurses and qualification

As presented in Table 5.55, the patients with higher qualifications were significantly more likely to have more knowledge about the difference between a RN and a practical nurse (n=116, 49.6%), than the patients with lower qualifications (χ^2 =22.554, 4*df*, *p*<0.001).

Table: 5.55: Patients' knowledge of the difference between Registered Nurses and practical nurses and qualification

Knowledge of the difference between RNs and practical nurses	Qualification										Total	
	Illiterate		Primary school		Middle school		High school		College/ university/ more			
	n	%	n	%	n	%	n	%	n	%	n	%
Yes	5	26.3	6	19.4	18	27.7	70	34.5	116	49.6	215	38.9
No	14	73.7	25	80.6	47	72.3	133	65.5	118	50.4	337	61.1
Total	19	100	31	100	65	100	203	100	234	100	552	100

(χ^2 =22.554, 4df, p<0.001)

5.7.2.21 Healthcare sector of patients and qualification

The healthcare sector of the patients varied significantly by their qualifications (χ^2=42.416, 8*df*, *p*<0.001). As Table 5.56 shows, the illiterate patients were more likely to be recruited from the public sector (n=12, 60.0%). The patients with higher qualifications (college/university/more) were more likely to be recruited from the private sector (n=94, 38.7%). The patients who had completed high school were more likely to be recruited from the RMS (n=90, 42.5%).

Table: 5.56: Healthcare sector of patients and qualification

Healthcare sector	Qualification										Total	
	Illiterate		Primary school		Middle school		High school		College/ university/ more			
	n	%	n	%	n	%	n	%	n	%	n	%
Public	12	60.0	17	50.0	36	50.7	83	39.2	77	31.7	225	38.8
Private	7	35.0	8	23.5	11	15.5	39	18.4	94	38.7	159	27.4
RMS	1	5.0	9	26.5	24	33.8	90	42.5	72	29.6	196	33.8
Total	20	100	34	100	71	100	212	100	234	100	580	100

(χ^2 =42.416, 8df, p<0.001)

5.7.2.22 Healthcare facility of patients and qualification

The healthcare facilities of the patient participants did not differ significantly based on their qualifications.

5.7.2.23 Patients' personal health behaviour data and qualification

There were no significant differences across a range of personal health behaviour data by the patients' qualification. However, the illiterate patients were more likely to be at the pre-contemplation stage relating to physical exercise whereas the patients with higher qualifications were more likely to be at the maintenance or action stage relating to physical exercise (χ^2 =17.897, 8*df*, *p*=0.022). These findings provide some support that education increases intention to exercise and active physical exercise.

5.7.2.24 Patients' employment and diagnosis with heart disease

As shown in Table 5.57, the patients who were diagnosed with heart disease were more likely to be unemployed (n=27, 20.3%) (χ^2 =6.515, 1*df*, *p*=0.011).

Table: 5.57: Patients' employment and diagnosis with heart disease

Employment	Diagnosis with heart disease				Total	
	Yes		No			
	n	%	n	%	n	%
Yes	58	31.4	166	42.5	224	38.9
No	127	68.6	225	57.5	352	61.1
Total	185	100	391	100	576	100

(χ^2 =6.515, 1df, p=0.011)

5.7.2.25 Healthcare sector of patients and diagnosis with heart disease

As shown in Table 5.58, the patients who were diagnosed with heart disease were significantly more likely to have been recruited from the RMS and the public sector, than the private sector (χ^2=39.470, 2*df*, *p*<0.001).

Table: 5.58: Healthcare sector of patients and diagnosis with heart disease

Healthcare sector	Diagnosis with heart disease				Total	
	Yes		No			
	n	%	n	%	n	%
Public	64	34.4	162	41.0	226	38.9
Private	28	15.1	131	33.2	159	27.4
RMS	94	50.5	102	25.8	196	33.7
Total	186	100	395	100	581	100

(χ^2 =39.470, 2df, p<0.001)

5.7.2.26 Personal health behaviour data of patients and diagnosis with heart disease

There was a significant relationship between the patients' smoking status and diagnosis with heart disease (χ^2=20.141, 2*df*, *p*<0.001). The patients diagnosed with heart disease

were more likely to have smoked in the past compared to the other patients; whereas the patients who did not have heart disease were more likely to have never smoked.

The patients diagnosed with heart disease were significantly more likely to report being an overweight body size, while the patients without heart disease were more likely to report below and normal body weight size (χ^2=23.278, 2*df*, *p*<0.001). The patients diagnosed with heart disease reported more barriers to doing exercise (χ^2=6.521, 1*df*, *p*=0.011) and were more likely to be at the pre-contemplation and contemplation stages relating to physical exercise (χ^2=6.970, 2*df*, *p*=0.011).

5.7.2.27 Patients' qualifications and nationality

As Table 5.59 shows, more Jordanian patients had completed high school or higher qualifications than did the non-Jordanian patients (χ^2 =17.267, 4*df*, *p*=0.002).

Table: 5.59: Patients' qualifications and nationality

Qualification	Nationality				Total	
	Jordanian		Non-Jordanian			
	n	%	n	%	n	%
Illiterate	14	2.9	6	8.5	20	3.6
Primary school	24	4.9	10	14.1	34	6.0
Secondary school	63	12.8	7	9.9	70	12.5
High school	186	37.9	18	25.4	204	36.3
College/university/more	204	41.5	30	42.3	234	41.6
Total	491	100	71	100	562	100

(χ^2 =17.267, 4df, p=0.002)

5.7.2.28 Patients' diagnosis with heart disease and nationality

As Table 5.60 shows, a significantly larger percentage of the Jordanian patients were diagnosed with heart disease (66.2%), than compared with only 20% of the non-Jordanian patients, (χ^2 =5.362, 1*df*, *p*=0.021).

Table: 5.60: Patients' diagnosis with heart disease and nationality

Diagnosis with heart disease	Nationality				Total	
	Jordanian		Non-Jordanian			
	n	%	n	%	n	%
Yes	167	66.2	14	20.0	181	32.1
No	327	33.8	56	80.0	383	67.9
Total	494	100	70	100	564	100

(χ^2 =5.362, 1df, p=0.021)

5.7.2.29 Healthcare sector of patients and nationality

The majority of the non-Jordanian patients were recruited from the private sector while the majority of the Jordanian patients were recruited from the RMS and the public sectors (χ^2 =121.976, 2*df*, *p*<0.001) (See Table 5.61).

Table: 5.61: Healthcare sector of patients and nationality

Healthcare sector	Nationality				Total	
	Jordanian		Non-Jordanian			
	n	%	n	%	n	%
Public	207	41.8	12	16.7	219	38.6
Private	95	19.2	58	80.6	153	27.0
RMS	193	39.0	2	2.8	195	34.4
Total	495	100	72	100	567	100

(χ^2 =121.976, 2df, p<0.001)

5.7.2.30 Healthcare facility of patients and nationality

The non-Jordanian patients were more likely to be recruited from the general hospitals while the Jordanian patients were more likely to be recruited from the cardiac institute and primary healthcare centres (χ^2 =18.347, 2*df*, *p*<0.001) (See Table 5.62).

Table: 5.62: Healthcare facility of patients and nationality

Healthcare facility	Nationality				Total	
	Jordanian		Non-Jordanian			
	n	%	n	%	n	%
General hospital	362	73.1	69	95.8	431	76.0
Cardiac institute	67	13.5	0	0	67	11.8
Primary healthcare centre	66	13.3	3	4.2	69	12.2
Total	495	100	72	100	567	100

(χ^2 =18.347, 2df, p<0.001).

Chapter Six

Findings Two: General Health Promotion by RNs from the Views of the RNs, Doctors, and Patients in Jordan

6.1 Introduction

This chapter presents the findings from the three sample groups (i.e. RNs, doctors and patients) regarding their views on general health promotion (19 items) using three sub-scales (i.e. responsibilities, perceptions and constraints). The findings of each sub-scale are presented and compared by demographic data, sample group, healthcare sector, healthcare facility and personal health behaviour data. The chapter also reports the participants' views of the role of different healthcare personnel (20 items) by sample group, healthcare sector, healthcare facility and personal health behaviour data.

6.2 Responsibilities sub-scale

The mean score of the total sample (n=1,723) for this sub-scale (six items) was 17.81 out of 24 (SD: 2.263; range: 7-24), indicating that the majority of the participants (74.2%) reported positive views regarding the RNs' responsibilities in health promotion. The total scores were not related to gender, age group, healthcare sector or healthcare facility. There were statistically significant differences between the three sample groups. The RNs gave more positive ratings regarding the RNs' responsibilities in health promotion compared to the doctors and the patients (F=13.303, 2,1720df, p<0.001).

In terms of the personal health behaviour data, the participants who perceived fewer barriers to doing physical exercise gave more positive ratings for the RNs' responsibilities in health promotion compared to those who perceived more barriers to

doing physical exercise (t=2.749,1709df, p=0.006). Additionally, the participants who were at the contemplation, action maintenance stages relating to physical exercise gave more positive ratings for the RNs' responsibilities in health promotion compared to those who were at the pre-contemplation stage (F=5.756, 3,1627df, p=0.001).

- **Responsibilities sub-scale items by personal health behaviour data of each sample group**

There were statistically significant differences among the RNs sample regarding the RNs' responsibilities in health promotion in relation to the Stages of Change for physical exercise (See Table 6.1) and exercise barriers. The RNs who were at the pre-contemplation stage relating to physical exercise gave more positive views for the RNs' responsibilities in health promotion compared with those who were at the contemplation, action and maintenance stages (e.g. "the RN should take more responsibility for health promotion"; p=0.022). Additionally, there were statistically significant differences regarding the RNs' views of responsibilities in health promotion by RNs in relation to exercise barriers of the RNs. Namely, the RNs who reported fewer exercise barriers were more likely to strongly disagree on the item "the RN should only provide health promotion counselling if it is requested by the doctors" (χ^2=16.939 3df, p=0.001).

Table: 6.1: Registered Nurses' views of responsibilities for health promotion and Stages of Change relating to physical exercise

Items		Pre-contemplation		Contemplation		Action		Maintenance		Total		*df*
		n	%	n	%	n	%	n	%	n	%	
The RN should take more responsibility for health promotion (n=602)	SD/ D/A	19	65.5	217	54.2	22	48.9	52	40.6	310	51.5	χ^2=9.676 p=0.022 3*df*
	SA	10	34.5	183	45.8	23	51.1	76	59.4	292	48.5	
The RN is the appropriate health personnel to get involved in health promotion (n=633)	D	12	37.5	71	17.1	9	18.0	19	14.0	111	17.5	χ^2=10.075 p=0.018 3*df*
	A	20	62.5	344	82.9	41	82.0	117	86.0	522	82.5	
The RN should only provide health promotion counselling if it is requested by the physicians (n=635)	D	25	78.1	373	89.9	40	76.9	104	76.5	542	85.4	χ^2=19.679 p<0.001 3*df*
	A	7	21.9	42	10.1	12	23.1	32	23.5	93	14.6	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

Regarding the doctors, there were statistically significant associations between the views of the doctors on the RNs' responsibilities of health promotion and their Stages of Change relating to physical exercise and their exercise barriers. Those doctors who were at the pre-contemplation stages were more likely to agree that "the RN should only provide health promotion counselling if it is requested by the physicians" compared with those in the action and maintenance stages (χ^2=7.852 3*df*, p=0.049). Similarly, those doctors who reported more exercise barriers were more likely to agree that "the RN should only provide health promotion counselling if it is requested by the physicians" compared with those who reported fewer exercise barriers (χ^2=6.492, 1*df*, p=0.007).

Regarding the patients, there were statistically significant differences regarding the views of the patients on the RNs' responsibilities of health promotion and their Stages of Change relating to physical exercise, their exercise barriers and smoking status. The patients who reported being at the contemplation stage relating to physical exercise

were more likely to disagree that "the RN should provide health promotion counselling if it is requested by the physicians" (χ^2=30.391, 9*df*, p<0.001) compared to those who were at the pre-contemplation stage. The patients who reported fewer exercise barriers were more likely to strongly agree that "the RN should take more responsibility for health promotion" (χ^2=5.016, 1*df*, p=0.025) compared to those who reported more barriers. The patients who had smoked in the past were more likely to agree that "the RN should provide health promotion counselling if it is requested by the physicians" (χ^2=6.899, 2*df*, p=0.032) compared to those who did not smoke.

6.2.1 Responsibilities sub-scale items by sample group

There were significant differences across sample groups for all items of the responsibilities sub-scale (Table 6.2). There was general consensus regarding the RNs' responsibilities for health promotion across the sample groups, however, the strength of agreement varied as can be seen by the different views of the doctors compared to the RNs and the patients. As indicated in Table 6.2, the majority of the three sample groups reported positive views with the doctors being more likely to disagree with RNs having responsibilities for health promotion compared with the RNs and the patients (e.g. "the RN is the most appropriate health personnel to get involved in health promotion"; p<0.001).

Table 6.2: General health promotion by sample group: responsibilities sub-scale

Items		RNs		Doctors		Patients		Total		*df*
		n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	
The RN should be a health advocate, insisting that preventive health is put on the political agenda (n=1719)	D	5	0.7	3	0.7	7	1.2	15	0.9	χ^2 =14.694 *p*=0.005 4*df*
	A	206	30.5	136	29.8	228	38.8	570	33.2	
	SA	464	68.7	318	69.6	352	60.0	1134	66.0	
The RN should take more responsibility for health promotion (n=1720)	D	36	5.3	8	1.8	31	5.3	75	4.4	χ^2 =32.476 *p*<0.001 2*df*
	A	330	48.9	181	39.7	219	37.2	730	42.4	
	SA	309	48.8	267	58.6	339	57.6	915	53.2	
The RN is the most appropriate health personnel to get involved in health promotion (n=1704)	SD	10	1.5	10	2.2	11	1.9	31	1.8	χ^2 =66.225 *p*<0.001 6*df*
	D	104	15.4	138	30.5	87	15.1	329	19.3	
	A	338	50.1	226	49.9	304	52.7	868	50.9	
	SA	222	32.9	79	17.4	175	30.3	476	27.9	
The RN should give priority to acute care rather than health education and counselling. (n=1694)	SD	18	2.7	10	2.2	28	4.9	56	3.3	χ^2 =13.642 *p*=0.034 6*df*
	D	157	23.4	128	28.4	130	22.7	415	24.5	
	A	260	38.8	178	39.5	213	37.2	651	38.4	
	SA	235	35.1	135	29.9	202	35.3	572	33.8	
The RN should only provide health promotion counselling if it is requested by the physician. (n=1716)	SD	238	35.2	84	18.4	123	21.1	445	25.9	χ^2 =111.418 *p*<0.001 6*df*
	D	335	49.6	228	50.0	240	41.1	803	46.8	
	A	57	8.4	100	21.9	151	25.9	308	17.9	
	SA	46	6.8	44	9.6	70	12.0	160	9.3	
The patient is totally responsible to promote his/her health (n=1712)	SD	183	27.1	167	36.8	155	26.6	505	29.5	χ^2 =84.798 *p*<0.001 6*df*
	D	284	42.1	189	41.6	202	34.6	675	39.4	
	A	115	17.0	71	15.6	147	25.2	333	19.5	
	SA	93	13.8	27	5.9	79	13.6	199	11.6	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

6.2.2 Responsibilities sub-scale items by healthcare sector

There were significant differences by healthcare sector for four items of the responsibilities sub-scale (See Table 6.3). There was general consensus regarding the RNs' responsibilities for health promotion across the three healthcare sectors, however, the strength of agreement varied, as can be seen by the different views of the participants recruited from the private sector compared to the participants recruited from other healthcare sectors. As indicated in Table 6.3, the participants who were recruited from the private sector were more likely to disagree with RNs having responsibilities for health promotion compared with those recruited from other healthcare sectors (e.g.

"the RN should only provide health promotion counselling if it is requested by the physician"; $p<0.001$).

Table 6.3: General health promotion by healthcare sector: responsibilities sub-scale

Items		Public		Private		RMS		Total		*df*
		n	%	n	%	n	%	n	%	
The RN should take more responsibility for health promotion (n=1720)	D	34	4.9	17	3.6	24	4.3	75	4.4	χ^2 =14.038 p=0.007 4*df*
	A	260	37.5	205	43.7	265	47.6	730	42.4	
	SA	400	57.6	247	52.7	268	48.1	915	53.2	
The RN is the most appropriate health personnel to get involved in health promotion. (n=1704)	SD	19	2.8	2	0.4	10	1.8	31	1.8	χ^2 =18.166 p=0.006 6*df*
	D	142	20.7	79	17.0	108	19.7	329	19.3	
	A	338	49.3	232	49.8	298	54.0	868	50.9	
	SA	187	27.3	153	32.8	136	24.6	476	27.9	
The RN should only provide health promotion counselling if it is requested by the physician. (n=1716)	SD	187	27.0	115	24.5	143	25.8	445	25.9	χ^2 =25.421 p<0.001 6*df*
	D	335	48.4	192	40.9	276	49.7	803	46.8	
	A	104	15.0	119	25.4	85	15.3	308	17.9	
	SA	66	9.5	43	9.2	51	9.2	160	9.3	
The patient is totally responsible to promote his/her health (n=1712)	SD	226	32.8	132	28.3	147	26.4	505	29.5	χ^2 =16.202 p=0.013 6*df*
	D	277	40.1	168	36.1	230	41.4	675	39.4	
	A	108	15.7	110	23.6	115	20.7	333	19.5	
	SA	79	11.4	56	12.0	64	11.5	199	11.6	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

6.2.3 Responsibilities sub-scale items by healthcare facility

There were significant differences by healthcare facility for two items of the responsibilities sub-scale (See Table 6.4). There was general consensus regarding the RNs' responsibilities for health promotion across the different healthcare facilities, however, the strength of agreement varied as can be seen by the different views of the participants recruited from the general hospitals compared to the participants recruited from primary healthcare centres and the cardiac institute. As indicated in Table 6.4, the participants who were recruited from the general hospitals were more likely to disagree with RNs having responsibilities for health promotion compared with those recruited from other healthcare facilities (e.g. "the patient is totally responsible for his/her health"; p=0.013).

Table 6.4: General health promotion by healthcare facility: responsibilities sub-scale

Items		General hospitals		Cardiac institute		Primary healthcare centres		Total		*df*
		n	%	n	%	n	%	n	%	
The RN should only provide health promotion counselling if it is requested by the physician (n=1716)	SD	324	25.2	54	28.7	67	27.8	445	25.9	χ^2 =15.940 *p*=0.014 6*df*
	D	584	45.4	93	49.5	126	52.3	803	46.8	
	A	243	18.9	27	14.4	38	15.8	308	17.9	
	SA	136	10.6	14	7.4	10	4.1	160	9.3	
The patient is totally responsible to promote his/her health (n=1712)	SD	366	28.5	57	30.0	82	34.5	505	29.5	χ^2 =16.146 *p*=0.013 6*df*
	D	491	38.2	78	41.5	106	44.5	675	39.4	
	A	273	21.2	32	17.0	28	11.8	333	19.5	
	SA	156	21.1	21	11.2	22	9.2	199	11.6	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

6.3 Perceptions sub-scale

The mean score of the total sample (n=1,724) for the perceptions sub-scale (nine items) was 24.17 (SD: 4.07; range: 2-36), indicating that the participants reported varied views about their perceptions of health promotion by RNs. The total scores were not related to the sample group, healthcare sector and age. The female participants gave more positive ratings regarding perceptions of health promotion by RNs compared with the male participants (*t=-2.429*, 1706*df*, *p*=0.015). The participants recruited from the primary healthcare centres and the cardiac institute gave more positive ratings regarding perceptions of health promotion by RNs compared with the participants from the general hospitals (*F*=12.624, 2,1721*df*, *p*<0.001).

In terms of the personal health behaviour data, there were no significant differences regarding the perceptions scores by perceived body weight. The non-smoker participants gave more positive ratings regarding perceptions of health promotion by RNs compared with the current smokers and past smokers (*F*=6.476, 2,1703*df*, *p*=0.002). The participants who perceived fewer barriers to undertaking exercise gave

more positive ratings regarding perceptions of health promotion by RNs, compared with those who perceived more barriers to undertaking exercise (t=7.042, 1710df, p<0.001). Additionally, the participants who were at the pre-contemplation stage relating to physical exercise gave less positive ratings regarding perceptions of health promotion by RNs, compared to those who were at the contemplation, action and maintenance stages (F=11.486, 3,1628df, p<0.001).

- **Perceptions sub-scale items by personal health behaviour data of each sample group**

Regarding the RNs, there were statistically significant associations between the RNs' perception of health promotion and their exercise barriers and Stages of Change relating to physical exercise. There was general consensus regarding the RNs' perceptions of health promotion by RNs and exercise barriers, however, the strength of agreement varied as can be seen by the different views of the RNs who reported fewer barriers to physical exercise and those with more barriers to physical exercise (e.g. "the RN finds health promotion dull and boring"; p=0.001) (See Table 6.5).

Table 6.5: Registered Nurses' perception of health promotion and exercise barriers

Items		Few exercise barriers		More exercise barriers		Total		*df*
		n	%	n	%	n	%	
The RNs finds health promotion dull and boring (n=671)	SD	109	42.2	116	28.1	225	33.5	χ^2=16.939 p=0.001 3*df*
	D	117	45.3	215	52.1	332	49.5	
	A	23	8.9	51	12.3	74	11.0	
	SA	9	3.5	31	7.5	40	6.0	
The RN should not interfere with the patient's life telling him/her to change his/her health related behaviour. (n=670)	SD	119	46.3	104	25.2	223	33.3	χ^2=36.751 p<0.001 3*df*
	D	115	44.7	233	56.4	348	51.9	
	A	19	7.4	50	12.1	69	10.3	
	SA	4	1.6	26	6.3	30	4.5	
The patient's lifestyle is conditioned by his/her culture and environment; there is not much that the RN can do to change them (n=668)	SD	44	17.2	45	10.9	89	13.3	χ^2=17.992 p<0.001 3*df*
	D	146	57.0	197	47.8	343	51.3	
	A	55	21.5	143	34.7	198	29.6	
	SA	11	4.3	27	6.6	38	5.7	
The patient does not take any notice of what the RN says about changing lifestyle. (n=663)	SD	37	14.8	19	4.6	56	8.4	χ^2=21.527 p<0.001 3*df*
	D	95	38.0	163	39.5	258	38.9	
	A	89	35.6	175	42.4	264	39.8	
	SA	29	11.6	56	13.6	85	12.8	
Giving a detailed explanation to the patients about their health tends to worry them rather than reassure them (n=665)	SD	19	7.5	20	4.9	39	5.9	χ^2=8.803 p=0.032 3*df*
	D	120	47.1	157	38.3	277	41.7	
	A	94	36.9	183	44.6	277	41.7	
	SA	22	8.6	50	12.2	72	10.8	
Helping the patients to understand how health-related behaviours interfere with health is an important part of the RNs' duty (n=667)	D	14	5.5	54	13.1	68	10.2	χ^2=9.980 p=0.002 1*df*
	A	241	94.5	358	86.9	599	89.8	
Patients find health promotion dull and boring (n=666)	SD	43	16.9	38	9.2	81	12.2	χ^2=13.133 p=0.004 3*df*
	D	127	49.8	198	48.2	325	48.8	
	A	74	29.0	139	33.8	213	32.0	
	SA	11	4.3	36	8.8	47	7.1	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

Similarly, there was general consensus regarding the RNs' perceptions of health promotion and the Stages of Change relating to physical exercise, however, the strength of agreement varied as can be seen by the different views of the RNs who were at the pre-contemplation stage relating to physical exercise, and those who were at the other stages (e.g. "giving a detailed explanation to the patients about their health tends to worry them rather than reassure them"; p=0.004) (See Table 6.6).

Table 6.6: RNs' perception of general health promotion and Stages of Change relating to physical exercise

Items		Pre-contemplation		Contemplation		Action		Maintenance		Total		*df*
		n	%	n	%	n	%	n	%	n	%	
The RN finds health promotion dull and boring (n=635)	SD	5	15.6	157	37.8	11	21.2	44	32.4	217	34.2	χ^2=81.873
	D	14	43.8	214	51.6	21	40.4	66	48.5	315	49.6	p<0.001
	A	11	34.4	36	8.7	6	11.5	13	9.6	66	10.4	9*df*
	SA	2	6.2	8	1.9	14	26.9	13	9.6	37	5.8	
The RN should not interfere with the patient's life telling him/her to change his/her health related behaviour (n=635)	D	23	71.9	379	91.3	32	61.5	112	82.4	546	86.0	χ^2=42.383
	A	9	28.1	36	8.7	20	38.5	24	17.6	89	14.0	p<0.001 3*df*
The patient's lifestyle is conditioned by his/her culture and environment; there is not much that the RN can do to change them. (n=633)	SD	4	12.5	52	12.6	9	17.3	22	16.2	87	13.7	χ^2=24.939
	D	11	34.4	230	55.7	19	36.5	67	49.3	327	51.7	p=0.003
	A	15	46.9	116	28.1	17	32.7	33	24.3	181	28.6	9*df*
	SA	2	6.2	15	3.6	7	13.5	14	10.3	38	6.0	
Giving a detailed explanation to the patients about their health tends to worry them rather than reassure them (n=628)	SD	1	3.2	24	5.9	2	3.8	9	6.6	36	5.7	χ^2=24.066
	D	12	38.7	177	43.3	12	23.1	63	46.3	264	42.0	p=0.004
	A	13	41.9	175	42.8	24	46.2	48	35.3	260	41.4	9*df*
	SA	5	16.1	33	8.1	14	26.9	16	11.8	68	10.8	
Helping the patients to understand how health-related behaviours interfere with health is an important part of the RNs' duty (n=630)	D	7	21.9	31	7.5	10	19.2	15	11.1	63	10.0	χ^2=12.880
	A	25	78.1	380	92.5	42	80.8	120	88.9	567	90.0	p=0.005 3*df*
Patients find health promotion dull and boring (n=629)	SD	1	3.2	54	13.1	3	5.8	18	13.3	76	12.1	χ^2=26.038
	D	16	51.6	210	51.1	17	32.7	64	47.4	307	48.8	p=0.002
	A	11	35.5	127	30.9	26	50.0	35	25.9	199	31.6	9*df*
	SA	3	9.7	20	4.9	6	11.5	18	13.3	47	7.5	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

Additionally, there was general consensus regarding the RNs' perception of health promotion and their smoking status (See Table 6.7), however, those RNs who were smokers or had smoked in the past reported different views than those non-smoker RNs (e.g. "helping the patients to understand how health-related behaviours interfere with health is an important part of the RNs' duty," p=0.040).

Table 6.7: RNs' perception of general health promotion and smoking status

Items		Never smoked		Smoked in the past		Current smoker		Total		*df*
		n	%	n	%	n	%	n	%	
The RN should not interfere with the patient's life telling him/her to change his/her health related behaviour (n=669)	SD	138	34.5	27	37.5	58	29.4	223	33.3	χ^2=32.299 p<0.001 6*df*
	D	223	55.8	37	51.4	87	44.2	347	51.9	
	A	30	7.5	4	5.6	35	17.8	69	10.3	
	SA	4	1.6	26	6.3	30	4.5	30	4.5	
The patient does not take any notice of what the RN says about changing lifestyle (n=662)	SD	36	9.1	4	5.6	16	8.2	56	8.5	χ^2=13.882 p=0.031 6*df*
	D	162	41.1	29	40.3	67	34.2	258	39.0	
	A	160	40.6	28	38.9	75	38.3	263	39.7	
	SA	36	9.1	11	15.3	38	19.4	85	12.8	
Helping the patients to understand how health-related behaviours interfere with health is an important part of the RNs' duty (n=666)	D	40	10.1	2	2.7	26	13.3	68	10.2	χ^2=6.447 p=0.040 2*df*
	A	357	89.9	71	97.3	170	86.7	598	89.9	
The patient gets annoyed when the RN asks him/her about health-related behaviours especially when it is not directly related to his/her presenting health problems (n=665)	SD	22	5.6	1	1.4	4	2.0	27	4.1	χ^2=15.171 p=0.019 6*df*
	D	122	30.8	23	31.5	55	28.1	200	30.1	
	A	199	50.3	46	63.0	102	52.0	347	52.2	
	SA	53	13.4	3	4.1	35	17.9	91	13.7	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

With regard to the doctors (See Table 6.8), there were statistically significant differences among the doctors regarding their perception of health promotion by RNs in relation to their exercise barriers and Stages of Change relating to physical exercise. Generally, the doctors who perceived more exercise barriers were more likely to report less positive views regarding their perception of health promotion by RNs compared to those who reported fewer exercise barriers (p<0.050).

Table 6.8: Doctors' perception of constraints to health promotion by RNs and exercise barriers

Items		Few exercise barriers		More exercise barriers		Total		*df*
		n	%	n	%	n	%	
The RN finds health promotion dull and boring (n=449)	SD	74	29.7	35	17.5	109	24.3	χ^2=9.360 *p*=0.025 3*df*
	D	101	40.6	90	45.0	191	42.5	
	A	60	24.1	61	30.5	121	26.9	
	SA	14	5.6	14	7.0	28	6.2	
The patient's lifestyle is conditioned by his/her culture and environment; there is not much that the RN can do to change them (n=452)	SD	70	27.8	30	15.0	100	22.1	χ^2=12.868 *p*=0.005 3*df*
	D	128	50.8	107	53.5	235	52.0	
	A	45	17.9	51	25.5	96	21.2	
	SA	9	3.6	12	6.0	21	4.6	
The patient does not take any notice of what the RN says about changing lifestyle (n=445)	SD	24	9.8	7	3.5	31	7.0	χ^2=8.772 *p*=0.032 3*df*
	D	98	39.8	76	38.2	174	39.1	
	A	93	37.8	94	47.2	187	42.0	
	SA	31	12.6	22	11.1	53	11.9	
Giving a detailed explanation to the patients about their health tends to worry them rather than reassure them (n=453)	SD	28	11.1	14	7.0	42	9.3	χ^2=11.851 *p*=0.008 3*df*
	D	126	50.0	83	41.3	209	46.1	
	A	78	31.0	93	46.3	171	37.7	
	SA	20	7.9	11	5.5	31	6.8	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

Additionally, the doctors who reported being at the pre-contemplation stages relating to physical exercise were more likely than those who were at the action and maintenance stages to agree that "the RN finds health promotion dull and boring" (χ^2=17.271, 9*df*, *p*=0.045). The doctors who were smokers or had smoked in the past were more likely to agree than those who never smoked before that "giving a detailed explanation to the patients about their health tends to worry them rather than reassure them" (χ^2=14.295, 6*df*, *p*=0.025).

Regarding the patients, there were statistically significant differences regarding the patients' perceptions of health promotion by RNs and their Stages of Change relating to physical exercise, exercise barriers and body weight size. As shown in Table 6.9, there was general consensus regarding the patients' perceptions of health promotion by RNs

and the Stages of Change relating to physical exercise, however, the strength of agreement varied as can be seen by the different views of the patients who were at the pre-contemplation stage relating to physical exercise and those who were at the other stages (e.g. "the patient does not take any notice of what the RN says about changing lifestyle"; $p<0.001$).

Table 6.9: Patients' perception of health promotion by Registered Nurses and Stages of Change relating to physical exercise

Items		Pre-contemplation		Contemplation		Action		Maintenance		Total		*df*
		n	%	n	%	n	%	n	%	n	%	
The RN finds health promotion dull and boring (n=554)	SD	8	23.5	146	41.6	18	38.3	32	26.2	204	36.8	χ^2=33.346 p<0.001 9*df*
	D	12	35.3	157	44.7	15	31.9	56	45.9	240	43.3	
	A	12	35.3	38	10.8	10	21.3	24	19.7	84	15.2	
	SA	2	5.9	10	2.8	4	8.5	10	8.2	26	4.7	
The RN should not interfere with the patient's life telling him/her to change his/her health related behaviour (n=558)	SD	10	28.6	131	36.9	13	27.7	31	25.6	185	33.2	χ^2=31.481 p<0.001 9*df*
	D	13	37.1	162	45.6	24	51.1	41	33.9	240	43.0	
	A	9	25.7	45	12.7	9	19.1	35	28.9	98	17.6	
	SA	3	8.6	17	4.8	1	2.1	14	11.6	35	6.3	
The patient does not take any notice of what the RN says about changing lifestyle (n=542)	D	9	26.5	208	60.6	25	54.3	56	47.1	298	55.0	χ^2=18.630 p<0.001 3*df*
	A	25	73.5	135	39.4	21	45.7	63	52.9	244	45.0	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

Additionally, the patients who reported few exercise barriers were more likely to disagree with the perceptions of health promotion by RNs compared with those who reported more exercise barriers (See Table 6.10). The patients who reported below normal body weight size were more likely to disagree that "giving a detailed explanation to the patients about their health tends to worry them rather than reassure them" compared to those who reported normal body weight size and overweight body size (χ^2=13.198, 6*df*, p=0.040).

Table: 6.10: Patients' perception of health promotion by Registered Nurses and exercise barriers

Items		Few exercise barriers		More exercise barriers		Total		*df*
		n	%	n	%	n	%	
The RN should not interfere with the patient's life telling him/her to change his/her health related behaviour (n=582)	D A	221 51	81.2 18.8	227 83	73.2 26.8	448 134	77.0 23.0	χ^2=5.263 *p*=0.022 1*df*
The patient does not take any notice of what the RN says about changing lifestyle (n=564)	D A	156 103	60.2 39.8	158 147	51.8 48.2	314 250	55.7 44.3	χ^2=4.032 *p*=0.045 1*df*
Giving a detailed explanation to the patients about their health tends to worry them rather than reassure them (n=574)	D A	139 127	52.3 47.4	133 175	43.2 56.8	272 302	47.4 52.6	χ^2=4.714 *p*=0.030 1*df*
The patient gets annoyed when the RN asks him/her about health-related behaviours especially when it is not directly related to his/her presenting health problems (n=577)	SD D A SA	29 116 93 28	10.9 43.6 35.0 10.5	16 108 153 34	5.1 34.7 49.2 10.9	45 224 246 62	7.8 38.8 42.6 10.7	χ^2=15.843 *p*=0.001 3*df*

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

6.3.1 Perceptions sub-scale items by sample group

There were significant differences by sample group for all items of the perceptions sub-scale (See Table 6.11). There was no consensus regarding the perceptions of health promotion by RNs across the sample groups as can be seen by the different views of the patients and the doctors, compared to the views of the RNs (e.g. "the patient gets annoyed when the RN asks him/her about health-related behaviours especially when it is not directly related to his/her presenting health problems", $p<0.001$).

Table 6.11: General health promotion by sample group: perceptions sub-scale

Items		RNs		Doctors		Patients		Total		*df*
		n	%	n	%	n	%	n	%	
The RN finds health promotion dull and boring (n=1708)	SD	226	33.5	109	24.1	216	37.2	551	32.3	χ^2=60.915 p<0.001 6*df*
	D	334	49.5	194	42.9	253	43.5	781	45.7	
	A	75	11.1	121	26.8	86	14.8	282	16.5	
	SA	40	5.9	28	6.2	26	4.5	94	5.5	
The RN should not interfere with the patient's life telling him/her to change his/her health related behaviour (n=1716)	SD	224	33.3	144	31.5	197	33.6	565	32.9	χ^2=18.073 p=0.006 6*df*
	D	349	51.9	232	50.8	254	43.3	835	48.7	
	A	70	10.4	62	13.6	100	17.1	232	13.5	
	SA	30	4.5	19	4.2	35	6.0	84	4.9	
The patient's lifestyle is conditioned by his/her culture and environment; there is not much that the RN can do to change them (n=1709)	SD	89	13.3	101	22.1	88	15.1	278	16.3	χ^2=40.785 p<0.001 6*df*
	D	345	51.4	237	52.0	248	42.6	830	48.6	
	A	199	29.7	96	21.1	199	34.2	494	28.9	
	SA	38	5.7	22	4.8	47	8.1	107	6.3	
The patient does not take any notice of what the RN says about changing lifestyle (n=1683)	SD	56	8.4	31	6.9	57	10.0	144	8.6	χ^2=13.071 p=0.042 6*df*
	D	259	38.9	175	39.0	258	45.4	692	41.1	
	A	266	39.9	190	42.3	194	34.2	650	38.6	
	SA	85	12.8	53	11.8	59	10.4	197	11.7	
Giving a detailed explanation to the patients about their health tends to worry them rather than reassure them (n=1703)	SD	39	5.8	42	9.2	79	13.7	160	9.4	χ^2=43.718 p<0.001 6*df*
	D	278	41.6	211	46.2	195	33.7	684	40.2	
	A	279	41.8	173	37.9	224	38.8	676	39.7	
	SA	72	10.8	31	6.8	80	13.8	183	10.7	
Helping the patients to understand how health-related behaviours interfere with health is an important part of the RNs' duty (n=1704)	SD	4	0.6	4	0.9	14	2.4	22	1.3	χ^2=30.508 p<0.001 6*df*
	D	64	9.6	47	10.4	68	11.7	179	10.5	
	A	362	54.0	296	65.3	331	57.0	989	58.0	
	SA	240	35.8	106	23.4	168	28.9	514	30.2	
The patient gets annoyed when the RN asks him/her about health-related behaviours especially when it is not directly related to his/her presenting health problems (n=1700)	SD	27	4.0	19	4.2	45	7.7	91	5.4	χ^2=34.106 p<0.001 6*df*
	D	202	30.2	145	32.2	224	38.6	571	33.6	
	A	349	52.2	251	55.8	249	42.9	849	49.9	
	SA	91	13.6	35	7.8	63	10.8	189	11.1	
The evidence on changing health-related behaviours is too uncertain and contradictory for the RN to counsel patients (n=1629)	SD	30	4.5	27	6.2	25	4.7	82	5.0	χ^2=18.981 p=0.004 6*df*
	D	278	41.9	194	44.3	178	33.7	650	39.9	
	A	297	44.8	193	44.1	278	52.7	768	47.1	
	SA	58	8.7	24	5.5	47	8.9	129	7.9	
Patients find health promotion dull and boring (n=1706)	SD	82	12.3	70	15.5	183	31.3	335	19.6	χ^2=95.574 p<0.001 6*df*
	D	326	48.7	208	45.9	265	45.4	799	46.8	
	A	214	32.0	143	31.6	100	17.1	457	26.8	
	SA	47	7.0	32	7.1	36	6.2	115	6.7	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

6.3.2 Perceptions sub-scale items by healthcare sector

There were significant differences by healthcare sector for four items of the perceptions sub-scale (See Table 6.12). There was general consensus regarding the perceptions for health promotion by RNs across the different healthcare sectors, however, the strength of agreement varied as can be seen by the different views of the participants recruited from the public sector compared to the participants recruited from the RMS and private sector (e.g. "the RN should not interfere with the patient's life telling him/her to change his/her health related behaviour"; p=0.034).

Table 6.12: General health promotion by healthcare sector: perceptions sub-scale

Items		Public		Private		RMS		Total		*df*
		n	%	n	%	n	%	n	%	
The RN should not interfere with the patient's life telling him/her to change his/her health related behaviour (n=1716)	SD	249	35.8	141	30.3	175	31.5	565	32.9	χ^2=13.624 p=0.034 6*df*
	D	334	48.1	223	47.9	278	50.1	835	48.7	
	A	75	10.8	82	17.6	75	13.5	232	13.5	
	SA	37	5.3	20	4.3	27	4.9	84	4.9	
Giving a detailed explanation to the patients about their health tends to worry them rather than reassure them (n=1703)	SD	78	11.4	34	7.3	48	8.7	160	9.4	χ^2=14.954 p=0.021 6*df*
	D	278	40.8	183	39.1	223	40.3	684	40.2	
	A	241	35.3	207	44.2	228	41.2	676	39.7	
	SA	85	12.5	44	9.4	54	9.8	183	10.7	
The patient gets annoyed when the RN asks him/her about health-related behaviours especially when it is not directly related to his/her presenting health problems (n=1700)	SD	32	4.7	21	4.5	38	6.9	91	5.4	χ^2=21.795 p=0.001 6*df*
	D	233	34.1	150	32.3	188	34.1	571	33.6	
	A	318	46.6	245	52.7	286	51.8	849	49.9	
	SA	100	14.6	49	10.5	40	7.2	189	11.1	
Patients find health promotion dull and boring (n=1706)	SD	156	22.6	77	16.6	102	18.5	335	19.6	χ^2=12.825 p=0.046 6*df*
	D	325	47.0	210	45.2	264	48.0	799	46.8	
	A	162	23.4	146	31.4	149	27.1	457	26.8	
	SA	48	6.9	32	6.9	35	6.4	115	6.7	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

6.3.3 Perceptions sub-scale items by healthcare facility

There were significant differences by healthcare facility for the five items of the perceptions sub-scale (See Table 6.13). There was no consensus regarding the perceptions of health promotion by RNs across the healthcare facilities, as can be seen by the different views of the participants who were recruited from primary healthcare centres, compared to those recruited from the general hospitals and the cardiac institute (e.g. "the RN should not interfere with the patient's life telling him/her to change his/her health related behaviour"; p=0.001).

Table 6.13: General health promotion by healthcare facility: perceptions sub-scale

Items		General hospitals		Cardiac institute		Primary healthcare centres		Total		*df*
		n	%	n	%	n	%	n	%	
The RN finds health promotion dull and boring (n=1708)	SD	380	29.6	70	37.6	101	42.3	551	32.3	χ^2=33.335 p<0.001 6*df*
	D	583	45.4	91	48.9	107	44.8	781	45.7	
	A	238	18.6	18	9.7	26	10.9	282	16.5	
	SA	82	6.4	7	3.8	5	2.1	94	5.5	
The RN should not interfere with the patient's life telling him/her to change his/her health related behaviour (n=1716)	SD	403	31.3	58	30.9	104	43.2	565	32.9	χ^2=21.855 p=0.001 6*df*
	D	624	48.5	100	53.2	111	46.1	835	48.7	
	A	193	15.0	23	12.2	16	6.6	232	13.5	
	SA	67	5.2	7	3.7	10	4.1	84	4.9	
The patient's lifestyle is conditioned by his/her culture and environment; there is not much that the RN can do to change them (n=1709)	SD	197	15.3	29	15.7	52	21.8	278	16.3	χ^2=15.830 p=0.015 6*df*
	D	614	47.8	88	47.6	128	53.6	830	48.6	
	A	390	30.4	54	29.2	50	20.9	494	28.9	
	SA	84	6.5	14	7.6	9	3.8	107	6.3	
The patient does not take any notice of what the RN says about changing lifestyle (n=1683)	SD	106	8.4	13	7.1	25	10.6	144	8.6	χ^2=15.830 p=0.015 6*df*
	D	489	38.7	81	44.3	122	51.7	692	41.1	
	A	513	40.6	71	38.8	66	28.0	650	38.6	
	SA	156	12.3	18	9.8	23	9.7	197	11.7	
Patients' find health promotion dull and boring (n=1706)	SD	238	18.6	41	22.0	56	23.5	335	19.6	χ^2=16.207 p=0.013 6*df*
	D	583	45.5	93	50.0	123	51.7	799	46.8	
	A	367	28.6	45	24.2	45	18.9	457	26.8	
	SA	94	7.3	7	3.8	14	5.9	115	6.7	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

6.4 Constraints sub-scale

The mean score of the total sample (n=1718) for the constraints sub-scale (four items) was 10.08 (SD: 2.34; range: 1-16), indicating that the participants reported varied views about constraints to health promotion. The total constraints scores were not related to gender, age group and perceived body weight. However, the doctors gave higher constraints scores to health promotion by RNs compared to the RNs and the patients (F=7.200, 2,1715df, p=0.001). The participants recruited from private sector gave higher constraints scores compared to the participants recruited from the public and the RMS sectors (F=5.777, 2,1715df, p=0.003). Also, the participants recruited from the primary healthcare centres and the cardiac institute gave higher constraints scores compared to those working in the general hospitals (F=5.858, 2,1715df, p=0.003).

In terms of the personal health behaviour data of the participants, the participants who were non-smokers gave higher constraints scores compared to those who were current smokers or past smokers (F=3.625, 2,1700df, p=0.027). The participants who perceived fewer barriers to doing personal exercise gave higher constraints scores compared to those who perceived more barriers to doing personal exercise (t=7.096, 1707df, p<0.001). Additionally, the participants who were at the contemplation, action and maintenance stages relating to physical exercise gave higher constraints scores compared to those who were at the pre-contemplation stage (F=6.559, 3,1625df, p<0.001).

- **Constraints sub-scale items by personal health behaviour data of each sample group**

Regarding the RNs, as indicated in Table 6.14, there were statistically significant differences regarding the RNs' perception of constraints to health promotion between

the RNs who reported fewer exercise barriers and those who reported more exercise barriers. For example, "RNs do not have enough time to carry out health promotion" (p=0.003).

Table: 6.14: Registered Nurses' perception of constraints to health promotion and exercise barriers

Items		Few exercise barriers		More exercise barriers		Total		*df*
		n	%	n	%	n	%	
RNs do not have enough time to carry out health promotion (n=671)	SD	10	3.9	2	0.5	12	1.8	χ^2=13.739 p=0.003 3*df*
	D	34	13.2	42	10.2	76	11.3	
	A	125	48.4	196	47.5	321	47.8	
	SA	89	34.5	173	41.9	262	39.0	
RNs do not have the necessary skills to promote health (n=672)	SD	47	18.2	56	13.5	103	15.3	χ^2=10.571 p=0.014 3*df*
	D	142	55.0	198	47.8	340	50.6	
	A	54	20.9	123	29.7	177	26.3	
	SA	15	5.8	37	8.9	52	7.7	
RNs do not speak the patient's language to be able to promote health (n=671)	SD	54	20.9	47	11.4	101	15.1	χ^2=19.264 p<0.001 3*df*
	D	148	57.4	299	55.4	377	56.2	
	A	47	18.2	100	24.2	147	21.9	
	SA	9	3.5	37	9.0	46	6.9	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

Similarly, there were statistically significant differences between the RNs who were at the pre-contemplation stages relating to physical exercise and those who were at the other stages (See Table 6.15). For example, "RNs do not have the necessary skills to promote health" (p=0.035).

Table 6.15: Registered Nurses' perception of constraints to health promotion and Stages of Change relating to physical exercise

Items		Pre-contemplation		Contemplation		Action		Maintenance		Total		*df*
		n	%	n	%	n	%	n	%	n	%	
RNs do not have the necessary skills to promote health (n=635)	D	16	50.0	280	67.5	27	51.9	92	67.6	415	65.4	χ^2=8.611 p=0.035 3*df*
	A	16	50.0	135	32.5	25	48.1	44	32.4	220	34.6	
RNs do not speak the patient's language to be able to promote health (n=634)	D	17	54.8	312	75.2	30	57.7	96	70.6	455	71.8	χ^2=11.948 p=0.008 3*df*
	A	14	45.2	103	24.8	22	42.3	40	29.4	179	28.2	
RNs have very limited knowledge about patient's culture to be able to promote health (n=632)	D	16	50.0	272	66.0	24	46.2	77	56.6	389	61.6	χ^2=11.888 p=0.008 3*df*
	A	16	50.0	140	34.0	28	53.8	59	43.4	243	38.4	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly

In terms of the doctors' perception of constraints to health promotion by RNs and their body weight size, the doctors who reported their body size as normal were more likely to agree that "RNs have very limited knowledge about the patient's culture to be able to promote health" compared to those with overweight and below body weight size (χ^2=17.115, 6*df*, *p*=0.009).

As indicated in Table 6.16, the patients who reported fewer exercise barriers were more likely to disagree with the constraints to health promotion by RNs compared to those who reported more exercise barriers. Additionally, the patients who were at the contemplation stage relating to physical exercise were more likely to disagree that "RNs do not have the necessary skills to promote health" compared to those who were at the pre-contemplation (χ^2=13.198, 6*df*, *p*=0.040). The patients who had never smoked were more likely to disagree that "RNs do not have the necessary skills to promote health" compared to those smokers or had smoked in the past (χ^2=8.105, 2*df*, *p*=0.017).

Table 6.16: Patients' perception of constraints to health promotion by Registered Nurses and exercise barriers

Items		Few exercise barriers		More exercise barriers		Total		*df*
		n	%	n	%	n	%	
RNs do not have enough time to carry out health promotion (n=579)	SD	36	13.5	27	8.6	63	10.9	χ^2=23.227 *p*<0.001 3*df*
	D	105	39.5	79	25.2	184	31.8	
	A	96	36.1	145	46.3	241	41.6	
	SA	29	10.9	62	19.8	91	15.7	
RNs do not have the necessary skills to promote health (n=579)	SD	65	24.2	33	10.6	98	16.9	χ^2=25.619 *p*<0.001 3*df*
	D	120	44.6	135	43.5	255	44.0	
	A	69	25.7	104	33.5	173	29.9	
	SA	15	5.6	38	12.3	53	9.2	
RNs do not speak the patient's language to be able to promote health (n=576)	SD	38	14.3	17	5.5	55	9.5	χ^2=20.163 *p*<0.001 3*df*
	D	132	49.5	124	40.0	256	44.4	
	A	75	28.2	132	42.6	207	35.9	
	SA	21	7.9	37	11.9	58	10.1	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

6.4.1 Constraints sub-scale items by sample group

There were significant differences by sample group for all items of the constraints sub-scale (Table 6.17). There was general consensus regarding the constraints to health promotion by RNs across the different sample groups, however, the strength of agreement varied as can be seen by the different views of the RNs and the patients compared to the doctors (e.g. "RNs do not have the necessary skills to promote health", $p<0.001$)

Table 6.17: General health promotion by sample group: constraints sub-scale

Items		RNs		Doctors		Patients		Total		*df*
		n	%	n	%	n	%	n	%	
RNs do not have enough time to carry out health promotion (n=1711)	SD	12	1.8	48	10.6	63	10.8	123	7.2	χ^2=253.043 p<0.001 6*df*
	D	78	11.6	167	36.8	185	31.7	430	25.1	
	A	321	47.6	194	42.7	244	41.9	759	44.4	
	SA	263	39.0	45	9.9	91	15.6	399	23.3	
RNs do not have the necessary skills to promote health (n=1711)	SD	104	15.4	37	8.2	99	17.0	240	14.0	χ^2=35.238 p<0.001 6*df*
	D	340	50.4	205	45.3	256	43.9	801	46.8	
	A	179	26.5	179	39.5	175	30.0	533	31.2	
	SA	52	7.7	32	7.1	53	9.1	137	8.0	
RNs do not speak the patient's language to be able to promote health (n=1703)	SD	102	15.1	52	11.6	56	9.7	210	12.3	χ^2=53.096 p<0.001 6*df*
	D	377	55.9	261	58.1	257	44.3	895	52.6	
	A	149	22.1	116	25.8	209	36.0	474	27.8	
	SA	46	6.8	20	4.5	58	10.0	124	7.3	
RNs have very limited knowledge about patient's culture to be able to promote health (n=1700)	SD	88	13.1	52	11.6	58	10.0	198	11.6	χ^2=29.346 p<0.001 6*df*
	D	320	47.6	243	54.0	237	41.0	800	47.1	
	A	205	30.5	133	29.6	225	38.9	563	33.1	
	SA	59	8.8	22	4.9	58	10.0	139	8.2	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

6.4.2 Constraints sub-scale items by healthcare sector

There were significant differences by healthcare sector for two items of the constraints sub-scale (See Table 6.18). There was no consensus regarding constraints to health promotion by RNs across the three healthcare sectors. Indeed, the participants recruited

from private sector reported different views (e.g. "RNs have very limited knowledge about the patient's culture to be able to promote health", $p<0.001$) compared with those who recruited from the other healthcare sectors.

Table 6.18: General health promotion by healthcare sector: constraints sub-scale

Items		Public		Private		RMS		Total		df
		n	%	n	%	n	%	n	%	
RNs do not have the necessary skills to promote health (n=1711)	SD	93	13.4	63	13.5	84	15.2	240	14.0	χ^2=16.119 p=0.013 6*df*
	D	329	47.5	197	42.4	275	49.6	162	29.2	
	A	201	29.0	170	36.6	162	29.2	533	31.2	
	SA	69	10.0	35	7.5	33	6.0	137	8.0	
RNs have very limited knowledge about patient's culture to be able to promote health (n=1700)	SD	99	14.4	32	6.9	67	12.2	198	11.6	χ^2=28.548 p<0.001 6*df*
	D	330	48.0	200	43.4	270	49.0	800	47.1	
	A	203	29.5	191	41.4	169	30.7	563	33.1	
	SA	56	8.1	38	8.2	45	8.2	139	8.2	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

6.4.3 Constraints sub-scale items by healthcare facility

There were significant differences by healthcare facility for all items of the constraints sub-scale (See Table 6.19). There was a general agreement regarding the constraints to health promotion by RNs across the different healthcare facilities, however, the strength of agreement varied as can be seen by the different views of the participants recruited from the general hospitals compared to those recruited from the primary healthcare centres and the cardiac institute (e.g. "RNs do not have the necessary skills to promote health"; p=0.009).

Table 6.19: General health promotion by healthcare facility: constraint sub-scale

Items		General hospitals		Cardiac institute		Primary healthcare centres		Total		*df*
		n	%	n	%	n	%	n	%	
RNs do not have enough time to carry out health promotion (n=1711)	SD	104	8.1	8	4.3	11	4.6	123	7.2	χ^2=16.985 *p*=0.009 6*df*
	D	310	24.1	43	23.0	77	32.1	430	25.1	
	A	568	44.2	82	43.9	109	45.4	759	44.4	
	SA	302	23.5	54	28.9	43	17.9	399	23.3	
RNs do not have the necessary skills to promote health (n=1711)	SD	188	14.7	24	12.8	28	11.7	240	14.0	χ^2=17.197 *p*=0.009 6*df*
	D	571	44.5	97	51.6	133	55.4	801	29.2	
	A	407	31.7	60	31.9	66	27.5	533	31.2	
	SA	117	9.1	7	3.7	13	5.4	137	8.0	
RNs do not speak the patient's language to be able to promote health (n=1703)	SD	150	11.7	25	13.3	35	14.7	210	12.3	χ^2=13.000 *p*=0.043 6*df*
	D	650	50.9	107	56.9	138	58.0	895	52.6	
	A	380	29.8	41	21.8	53	22.3	474	27.8	
	SA	97	7.6	15	8.0	12	5.0	124	7.3	
RNs have very limited knowledge about patient's culture to be able to promote health (n=1700)	SD	143	11.2	26	13.9	29	12.2	198	11.6	χ^2=27.437 *p*<0.001 6*df*
	D	562	44.1	102	54.5	136	57.1	800	47.1	
	A	456	35.8	44	23.5	63	26.5	563	33.1	
	SA	114	8.9	15	8.0	10	4.2	139	8.2	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

6.5 Roles of different healthcare personnel

The views of the participants on the roles of different healthcare personnel related to each item are presented in Table 6.20. The majority of the participants reported that "doctors should supervise nursing practice and nurses should do what the doctors tell them" (n=1,212, 71.3%) and "doctors should be responsible for teaching nurses" (n=909, 53.3%). Eighteen percent of the participants (n=306) reported "*don't know*" to the item "there is little if any difference between the range of nursing care activities provided by RNs and practical nurses" while 52.2% (n=884) reported "*agree*". One third disagreed that "RNs are knowledgeable enough to provide health promotion" (n=578, 34.2%) and "RNs are knowledgeable enough to consult patients (and family if relevant) regarding planned care" (n=525, 30.9%). However, over half of the participants (n=1042, 61.5%) agreed that "in general, RNs are able to describe concisely and accurately patient's condition to other healthcare team members".

Table 6.20: Roles of difference healthcare personnel

Items		Total sample	
		n	%
There is little if any difference between the range of nursing care activities provided by RNs and practical nurses (n=1695)	DN	306	18.1
	D	505	29.8
	A	884	52.2
Only doctors should carry out physical assessments of patients.(n=1701)	DN	83	4.9
	D	986	58.0
	A	632	37.2
Only RNs should discuss prescribed medications with patients or the family (n=1699)	DN	103	6.1
	D	1039	61.2
	A	557	32.8
Only RNs should give prescribed medications (n=1695)	DN	102	6.0
	D	638	37.6
	A	955	56.3
Doctors should order specific nursing care for (their) patients. (n=1705)	DN	57	3.3
	D	297	17.4
	A	1351	79.2
Doctors should supervise nursing practice and nurses should do what the doctors tell them (n=1699)	DN	41	2.4
	D	446	26.3
	A	1212	71.3
RNs can assess the patient's condition effectively and inform the doctors when required (n=1703)	DN	103	6.0
	D	477	28.0
	A	1123	65.9
Only doctors should discuss the diagnosis with the patient (n=1708)	DN	57	3.3
	D	443	25.9
	A	1208	70.7
RNs should decide independently of doctors what nursing care is appropriate for their patients (n=1703)	DN	90	5.3
	D	1012	59.4
	A	601	35.3
Practical nurses can fully cover the place of RNs in his/her absence. (n=1700)	DN	225	13.2
	D	824	48.5
	A	651	38.3
All nursing staff should comfort and reassure patients emotionally. (n=1701)	DN	22	1.3
	D	136	8.0
	A	1543	90.7
Only RNs should give information relating to patient's condition to the family to reduce anxiety (n=1701)	DN	117	6.9
	D	1050	61.7
	A	534	31.4
The patient's family solely provides all the emotional support the patient needs (n=1699)	DN	79	4.6
	D	907	53.4
	A	713	42.0
In general, RNs are knowledgeable enough to assess the patient's educational status prior providing information (n=1688)	DN	178	10.5
	D	477	28.3
	A	1033	61.2
In general, RNs are knowledgeable enough to provide health education relevant to patient's diagnosis and prognosis (n=1688)	DN	157	9.3
	D	578	34.2
	A	953	56.5
In general, RNs are knowledgeable enough to consult patient (and family if relevant) regarding planned care (n=1700)	DN	126	7.4
	D	525	30.9
	A	1049	61.7
In general, RNs are knowledgeable enough to discuss required care with the family if the patient is dependent (n=1696)	DN	111	6.5
	D	371	21.9
	A	1214	71.6
In general, RNs are able to describe concisely and accurately patient's condition to other healthcare team members (n=1693)	DN	132	7.8
	D	519	30.7
	A	1042	61.5
Doctors should be responsible for teaching nurses (n=1707)	DN	108	6.3
	D	690	40.4
	A	909	53.3

DN: don't know, D: disagree, A: agree

Cont. Table 6.20: Roles of difference healthcare personnel

Items		Total sample	
		n	%
Only RNs should explain forthcoming procedures or investigations to the patient (n=1704)	DN	133	7.8
	D	1137	66.7
	A	434	25.5

DN: don't know, D: disagree, A: agree

6.5.1 Roles of different healthcare personnel by healthcare sector

As shown in Table 6.21, there were significant differences regarding the roles of healthcare personnel across the healthcare sectors. There was no consensus by healthcare sector as can be seen by the different views of the participants recruited from the public sector compared to those recruited in the private sector and the RMS. For example, more participants recruited from the public sector than the private sector and the RMS agreed that "doctors should supervise nursing practice and nurses should do what the doctors tell them" (χ^2 =28.422, 4*df*, p<0.001).

Table 6.21: Roles of different healthcare personnel by healthcare sector

Items		Public		Private		RMS		Total		*df*
		n	%	n	%	n	%	n	%	
There is little if any difference between the range of nursing care activities provided by RNs and practical nurses (n=1695)	DN	119	17.4	67	14.5	120	21.8	306	18.1	χ^2 =12.017 p=0.017 4*df*
	D	192	28.2	145	31.3	168	30.5	505	29.8	
	A	371	54.4	251	54.2	262	47.6	884	52.2	
Only RNs should discuss prescribed medications with patients or the family. (n=1699)	DN	37	5.4	25	5.4	41	7.4	103	6.1	χ^2 =29.930 p<0.001 4*df*
	D	470	68.6	269	58.1	300	54.4	1039	61.2	
	A	178	26.0	169	36.5	210	38.1	557	32.8	
Only RNs should give prescribed medications (n=1695)	DN	49	7.2	25	5.4	28	5.1	102	6.0	χ^2 =39.284 p<0.001 4*df*
	D	311	45.7	150	32.3	177	32.2	638	37.6	
	A	321	47.1	289	62.3	345	62.7	955	56.3	
Doctors should order specific nursing care for (their) patients (n=1705)	DN	22	3.2	14	3.0	21	3.8	57	3.3	χ^2 =14.784 p=0.005 4*df*
	D	101	14.7	107	23.0	89	16.1	297	17.4	
	A	565	82.1	344	74.0	442	80.1	1351	79.2	
Doctors should supervise nursing practice and nurses should do what the doctors tell them (n=1699)	DN	18	2.6	12	2.6	11	2.0	41	2.4	χ^2 =28.422 p<0.001 4*df*
	D	133	19.4	147	31.7	166	30.2	446	26.3	
	A	534	78.0	305	65.7	373	67.8	1212	71.3	
RNs can assess the patient's condition effectively and inform the doctors when required (n=1703)	DN	37	5.4	32	6.9	34	6.2	103	6.0	χ^2 =12.117 p=0.016 4*df*
	D	223	32.4	121	26.1	133	24.1	477	28.0	
	A	428	62.2	311	67.0	384	69.7	1123	65.9	
RNs should decide independently of doctors what nursing care is appropriate for their patients (n=1703)	DN	35	5.1	19	4.1	36	6.6	90	5.3	χ^2 =12.859 p=0.012 4*df*
	D	434	63.1	256	54.9	322	58.7	1012	59.4	
	A	219	31.8	191	41.0	191	34.8	601	35.3	

DN: don't know, D, disagree, A: agree

Cont. Table 6.21: Roles of different healthcare personnel by healthcare sector

Items		Public		Private		RMS		Total		*df*
		n	%	n	%	n	%	n	%	
Practical nurses can fully cover the place of RNs in his/her absence (n=1700)	DN	93	13.5	55	11.9	77	14.0	225	13.2	χ^2 =19.503
	D	293	42.6	239	51.7	292	53.1	824	48.5	*p*=0.001
	A	302	43.9	168	36.4	181	32.9	651	38.3	4*df*
All nursing staff should comfort and reassure patients emotionally (n=1701)	DN	4	0.6	6	1.3	12	2.2	22	1.3	χ^2 =18.169
	D	39	5.7	52	11.2	45	8.2	136	8.0	*p*=0.001
	A	647	93.8	407	87.5	489	89.6	1543	90.7	4*df*
Only RNs should give information relating to patient's condition to the family to reduce anxiety (n=1701)	DN	47	6.8	26	5.6	44	8.0	117	6.9	χ^2 =10.995
	D	452	65.7	277	59.6	321	58.6	1050	61.7	*p*=0.027
	A	189	27.5	162	34.8	183	33.4	534	31.4	4*df*
In general, RNs are knowledgeable enough to provide health education relevant to patient's diagnosis and prognosis.(n=1688)	DN	62	9.1	32	7.0	63	11.5	157	9.3	χ^2 =14.257
	D	255	37.3	165	36.0	158	28.9	578	34.2	*p*=0.007
	A	367	53.7	261	57.0	325	59.9	953	56.5	4*df*
In general, RNs are able to describe concisely and accurately patient's condition to other healthcare team members (n=1693)	DN	57	8.3	27	5.9	48	8.8	132	7.8	
	D	240	34.9	139	30.3	140	25.6	519	30.7	χ^2 =16.166
	A	390	56.8	293	63.8	359	65.6	1042	61.5	*p*=0.003
										4*df*

DN: don't know, D, disagree, A: agree

6.5.2 Roles of different healthcare personnel by sample group

There were significant differences regarding the roles of healthcare personnel across the sample groups (i.e. RNs, doctors and patients) for all items. There was no consistent agreement in the views of the RNs, the doctors and the patients as can be seen by the different views of the RNs compared to the views of the doctors and the patients (See Table 6.22). More doctors and patients than the RNs disagreed with the role of RNs as health promoters (e.g. "RNs are knowledgeable enough to provide health education relevant to patient's diagnosis and prognosis"; χ^2=92.801, 4*df*, p<.001). Similarly, more doctors and patients than the RNs agreed that "doctors should supervise nursing practice and nurses should do what the doctors tell them" (χ^2=342.093, 4*df*, p<0.001) and that "doctors should be responsible for teaching nurses" (χ^2=235.471, 4*df*, p<0.001).

Table 6.22: Roles of different healthcare personnel by sample group

Items		RNs		Doctors		Patients		Total		*df*
		n	%	n	%	n	%	n	%	
There is little if any difference between the range of nursing care activities provided by RNs and practical nurses (n=1695)	DN	22	3.3	82	18.4	202	34.9	306	18.1	χ^2 =218.861 p<0.001 4*df*
	D	241	35.9	150	33.7	114	19.7	505	29.8	
	A	408	60.8	213	47.9	263	45.4	884	52.2	
Only doctors should carry out physical assessments of patients.(n=1701)	DN	18	2.7	7	1.6	58	9.9	83	4.9	χ^2 =188.165 p<0.001 4*df*
	D	489	73.2	280	62.2	217	37.2	986	58.0	
	A	161	24.1	163	36.2	308	52.8	632	37.2	
Only RNs should discuss prescribed medications with patients or the family. (n=1699)	DN	17	2.5	13	2.9	73	12.5	103	6.1	χ^2 =92.031 p<0.001 4*df*
	D	432	64.6	316	71.0	291	49.7	1039	61.2	
	A	220	32.9	116	26.1	221	37.8	557	32.8	
Only RNs should give prescribed medications (n=1695)	DN	17	2.6	23	5.1	62	10.7	102	6.0	χ^2 =92.079 p<0.001 4*df*
	D	189	28.4	197	43.8	252	43.4	638	37.6	
	A	459	69.0	230	51.1	266	45.9	955	56.3	
Doctors should order specific nursing care for (their) patients. (n=1705)	DN	14	2.1	7	1.6	36	6.2	57	3.3	χ^2 =96.339 p<0.001 4*df*
	D	180	26.8	35	7.8	82	14.1	297	17.4	
	A	478	71.1	409	90.7	464	79.7	1351	79.2	
Doctors should supervise nursing practice and nurses should do what the doctors tell them (n=1699)	DN	11	1.6	13	2.9	17	2.9	41	2.4	χ^2 =342.093 p<0.001 4*df*
	D	339	50.6	34	7.6	73	12.6	446	26.3	
	A	320	47.8	403	89.6	489	84.5	1212	71.3	
RNs can assess the patient's condition effectively and inform the doctors when required.(n=1703)	DN	20	3.0	22	4.9	61	10.4	103	6.0	χ^2 =120.143 p<0.001 4*df*
	D	109	16.3	166	36.7	202	34.6	477	28.0	
	A	538	80.7	264	58.4	321	55.0	1123	65.9	
Only doctors should discuss the diagnosis with the patient. (n=1708)	DN	21	3.1	11	2.4	25	4.3	57	3.3	χ^2 =78.528 p<0.001 4*df*
	D	249	37.2	73	16.2	121	20.6	443	25.9	
	A	400	59.7	367	81.4	441	75.1	1208	70.7	
RNs should decide independently of doctors what nursing care is appropriate for their patients (n=1703)	DN	22	3.3	9	2.0	59	10.2	90	5.3	χ^2 =129.905 p<0.001 4*df*
	D	329	49.2	347	76.6	336	57.8	1012	59.4	
	A	318	47.5	97	21.4	186	32.0	601	35.3	
Practical nurses can fully cover the place of RNs in his/her absence. (n=1700)	DN	28	4.2	61	13.6	136	23.4	225	13.2	χ^2 =154.340 p<0.001 4*df*
	D	415	61.9	223	49.7	186	32.0	824	48.5	
	A	227	33.9	165	36.7	259	44.6	651	38.3	

DN: don't know, D, disagree, A: agree

Cont. Table 6.22: Roles of different healthcare personnel by sample group

Items		RNs		Doctors		Patients		Total		*df*
		n	%	n	%	n	%	n	%	
All nursing staff should comfort and reassure patients emotionally. (n=1701)	DN	9	1.3	1	0.2	12	2.1	22	1.3	χ^2 =13.278
	D	67	10.0	28	6.2	41	7.1	136	8.0	*p*=0.010
	A	594	88.7	423	93.6	526	90.8	1543	90.7	4*df*
Only RNs should give information relating to patient's condition to the family to reduce anxiety (n=1701)	DN	34	5.1	20	4.4	63	10.9	117	6.9	χ^2 =72.630
	D	437	65.0	331	73.1	282	49.0	1050	61.7	*p*<0.001
	A	201	29.9	102	22.5	231	40.1	534	31.4	4*df*
The patient's family solely provides all the emotional support the patient needs (n=1699)	DN	31	4.6	21	4.6	27	4.7	79	4.6	χ^2 =34.577
	D	349	52.1	290	64.2	268	46.4	907	53.4	*p*<0.001
	A	290	43.3	141	31.2	282	48.9	713	42.0	4*df*
In general, RNs are knowledgeable enough to assess the patient's educational status prior providing information.(n=1688)	DN	35	5.2	41	9.2	102	17.8	178	10.5	χ^2 =95.778
	D	143	21.4	145	32.4	189	33.0	477	28.3	*p*<0.001
	A	490	73.4	261	58.3	282	49.2	1033	61.2	4*df*
In general, RNs are knowledgeable enough to provide health education relevant to patient's diagnosis and prognosis (n=1688)	DN	31	4.6	42	9.4	84	14.7	157	9.3	χ^2 =92.801
	D	184	27.5	209	46.7	185	32.5	578	34.2	*p*<0.001
	A	455	67.9	197	44.0	301	52.8	953	56.5	4*df*
In general, RNs are knowledgeable enough to consult patient (and family if relevant) regarding planned care. (n=1700)	DN	29	4.3	39	8.7	58	10.0	126	7.4	χ^2 =66.663
	D	171	25.5	194	43.2	160	27.6	525	30.9	*p*<0.001
	A	471	70.2	216	48.1	362	62.4	1049	61.7	4*df*
In general, RNs are knowledgeable enough to discuss required care with the family if the patient is dependent. (n=1696)	DN	24	3.6	42	9.4	45	7.8	111	6.5	χ^2 =47.144
	D	124	18.5	135	30.2	112	19.4	371	21.9	*p*<0.001
	A	524	78.0	270	60.4	420	72.8	1214	71.6	4*df*
In general, RNs are able to describe concisely and accurately patient's condition to other healthcare team members.(n=1693)	DN	18	2.7	41	9.2	73	12.7	132	7.8	χ^2 =120.269
	D	142	21.2	189	42.3	188	32.6	519	30.7	*p*<0.001
	A	509	76.1	217	48.5	316	54.8	1042	61.5	4*df*
Doctors should be responsible for teaching nurses (n=1707)	DN	25	3.7	27	6.0	56	9.6	108	6.3	χ^2 =235.471
	D	407	60.7	177	39.1	106	18.2	690	40.4	*p*<0.001
	A	239	35.6	249	55.0	421	72.2	909	53.3	4*df*
Only RNs should explain forthcoming procedures or investigations to the patient (n=1704)	DN	26	3.9	20	4.4	87	14.9	133	7.8	χ^2 =73.714
	D	481	71.7	325	72.2	331	56.8	1137	66.7	*p*<0.001
	A	164	24.4	105	23.3	165	28.3	434	25.5	4*df*

DN: don't know, D, disagree, A: agree

6.5.3 Roles of different healthcare personnel by healthcare facility

As Table 6.23 shows, there were significant differences regarding the roles of healthcare personnel across the healthcare facilities in 11 out of 20 items. There was no consensus across the healthcare facilities, as can be seen by the different views of the participants recruited from primary healthcare centres, compared to those recruited from the general hospitals and the cardiac institute. For instance, a greater proportion of the participants recruited from primary healthcare centres disagreed that "only RNs should give prescribed medications" compared to those recruited in the general hospitals and the cardiac institute (e.g. "only RNs should give prescribed medications"; χ^2=72.555, 4*df*, p<0.001).

Table 6.23: Roles of different healthcare personnel by healthcare facility

Items		General hospitals		Cardiac institute		Primary healthcare centres		Total		*df*
		n	%	n	%	n	%	n	%	
Only RNs should discuss prescribed medications with patients or the family. (n=1699)	DN	75	5.9	11	5.9	17	7.2	103	6.1	χ^2=25.690
	D	757	59.3	106	57.0	176	74.3	1039	61.2	p<0.001
	A	444	34.8	69	37.1	44	18.6	557	32.8	4*df*
Only RNs should give prescribed medications (n=1695)	DN	76	6.0	6	3.3	20	8.4	102	6.0	χ^2 =72.555
	D	435	34.2	60	32.6	143	60.1	638	37.6	p<0.001
	A	762	59.9	118	64.1	75	31.5	955	56.3	4*df*
Doctors should supervise nursing practice and nurses should do what the doctors tell them (n=1699)	DN	28	2.2	5	2.7	8	3.4	41	2.4	χ^2 =22.192
	D	354	27.7	58	31.4	34	14.3	446	26.3	p<0.001
	A	894	70.1	122	65.9	196	82.4	1212	71.3	4*df*
RNs can assess the patient's condition effectively and inform the doctors when required (n=1703)	DN	75	5.9	13	7.0	15	6.2	103	6.0	χ^2 =24.975
	D	345	27.0	36	19.4	96	39.8	477	28.0	p<0.001
	A	856	67.1	137	73.7	130	53.9	1123	65.9	4*df*
RNs should decide independently of doctors what nursing care is appropriate for their patients (n=1703)	DN	63	4.9	10	5.4	17	7.1	90	5.3	χ^2 =24.055
	D	736	57.5	105	57.1	171	71.5	1012	59.4	p<0.001
	A	481	37.6	69	37.5	51	21.3	601	35.3	4*df*
Practical nurses can fully cover the place of RNs in his/her absence (n=1700)	DN	161	12.6	28	15.1	36	15.2	225	13.2	χ^2 =22.763
	D	633	49.6	105	56.5	86	36.3	824	48.5	p<0.001
	A	483	37.8	53	28.5	115	48.5	651	38.3	4*df*
Only RNs should give information relating to patient's condition to the family to reduce anxiety (n=1701)	DN	84	6.6	13	7.1	20	8.3	117	6.9	χ^2 =33.486
	D	751	58.8	117	63.6	182	75.8	1050	61.7	p<0.001
	A	442	34.6	54	29.3	38	15.8	534	31.4	4*df*
In general, RNs are knowledgeable enough to provide health education relevant to patient's diagnosis and prognosis (n=1688)	DN	110	8.7	25	13.7	22	9.2	157	9.3	χ^2 =19.893
	D	443	35.0	39	21.3	96	40.3	578	34.2	p<0.001
	A	714	56.4	119	65.0	120	50.4	953	56.5	4*df*

DN: don't know, D, disagree, A: agree

Table 6.23: Roles of different healthcare personnel by healthcare facility

Items		General hospitals		Cardiac institute		Primary healthcare centres		Total		*df*
		n	%	n	%	n	%	n	%	
In general, RNs are able to describe concisely and accurately patient's condition to other healthcare team members (n=1693)	DN	96	7.6	12	6.5	24	10.1	132	7.8	χ^2 =21.044 p<0.001 4*df*
	D	382	30.1	42	22.7	95	40.1	519	30.7	
	A	793	62.4	131	70.8	118	49.8	1042	61.5	
Doctors should be responsible for teaching nurses. (n=1707)	DN	81	6.3	10	5.4	17	7.1	108	6.3	χ^2 =10.415 p=0.034 4*df*
	D	516	40.3	92	49.5	82	34.0	690	40.4	
	A	683	53.4	84	45.2	142	58.9	909	53.3	
Only RNs should explain forthcoming procedures or investigations to the patient (n=1704)	DN	89	7.0	23	12.4	21	8.8	133	7.8	χ^2 =73.714 p<0.001 4*df*
	D	836	65.3	121	65.4	180	75.3	1137	66.7	
	A	355	27.7	41	22.2	38	15.9	434	25.5	

DN: don't know, D, disagree, A: agree

6.5.4 Roles of different healthcare personnel by personal health behaviour data

The findings suggested that there were significant differences regarding the roles of different healthcare personnel across a range of personal health behaviour data. More non-smokers than smokers and those who had smoked in the past agreed that "in general, RNs are knowledgeable enough to discuss required care with the family if the patient is dependent" (χ^2=12.410, 4*df*, p=0.015) and disagreed that "only RNs should give information relating to patient's condition to the family to reduce anxiety" (χ^2=13.660, 4*df*, p=0.001). However, more smokers than non-smokers and those who had smoked in the past agreed that "only RNs should explain forthcoming procedures or investigations to the patient" (χ^2=10.558, 4*df*, p=0.032) and disagreed that "all nursing staff should comfort and reassure patients emotionally" (χ^2=13.078, 4*df*, p=0.011).

There were significant differences regarding the roles of different healthcare personnel by perceived body weight (See Table 6.24). There was no consensus in five items as can be seen by the different views of the participants who perceived themselves as below body weight compared to those who perceived themselves as normal and overweight body weight (e.g. "RNs are knowledgeable enough to discuss required care with the family if the patient is dependent", χ^2=22.633, 4*df*, p<0.001).

Table 6.24: Roles of different healthcare personnel by perceived body weight size

Items		Below normal body weight size		Normal body weight size		Overweight body size		Total		*df*
		n	%	n	%	n	%	n	%	
There is little if any difference between the range of nursing care activities provided by RNs and practical nurses (n=1633)	DN	100	14.2	72	18.6	117	21.6	289	17.7	χ^2=21.885 p<0.001 4*df*
	D	226	32.1	91	23.5	170	31.4	487	29.8	
	A	378	53.7	224	57.9	255	47.0	857	52.5	
Doctors should order specific nursing care for (their) patients (n=1647)	DN	22	3.1	20	5.1	13	2.4	55	3.3	χ^2 =12.189 p=0.016 4*df*
	D	146	20.5	61	15.6	85	15.6	292	17.7	
	A	543	76.4	309	79.2	448	82.1	1300	78.9	
The patient's family solely provides all the emotional support the patient needs. (n=1642)	DN	31	4.4	22	5.6	22	4.1	75	4.6	χ^2 =12.959 p=0.011 4*df*
	D	378	53.3	184	47.2	320	58.9	882	53.7	
	A	300	42.3	184	47.2	201	37.0	685	41.7	
In general, RNs are knowledgeable enough to discuss required care with the family if the patient is dependent (n=1641)	DN	32	4.5	39	10.0	36	6.6	107	6.5	χ^2 =22.633 p<0.001 4*df*
	D	137	19.4	81	20.8	143	26.3	361	22.0	
	A	539	76.1	269	69.2	365	67.1	1173	71.5	
In general, RNs are able to describe concisely and accurately patient's condition to other healthcare team members (n=1638)	DN	48	6.8	43	11.2	38	7.0	129	7.9	χ^2 =16.627 p=0.002 4*df*
	D	194	27.3	122	31.7	187	34.5	503	30.7	
	A	469	66.0	220	57.1	317	58.5	1006	61.4	

DN: don't know, D: disagree, A: agree

There were significant differences regarding the views on roles of different healthcare personnel by the participants' perceptions of exercise barriers in seven items (See Table 6.25). There was no consensus regarding the participants' views as can be seen by the different views of the participants who perceived more barriers to undertaking exercise compared to those who perceived fewer barriers to doing exercise (e.g. "there is little if any difference between the range of nursing care activities provided by RNs and practical nurses"; χ^2=18.804, 2*df, p*<0.001).

Table 6.25: Roles of different healthcare personnel by perceptions of exercise barriers

Items		Few exercise barriers		More exercise barriers		Total		df
		n	%	n	%	n	%	
There is little if any difference between the range of nursing care activities provided by RNs and practical nurses (n=1689)	DN	165	21.5	139	15.1	304	18.0	χ^2=18.804
	D	244	31.7	260	28.3	504	29.8	p<0.001
	A	360	46.8	521	56.6	881	52.2	2*df*
Only RNs should discuss prescribed medications with patients or the family (n=1694)	DN	50	6.5	53	5.8	103	6.1	χ^2 =20.246
	D	513	66.4	523	56.8	1036	61.2	p<0.001
	A	210	27.2	345	37.5	555	32.8	2*df*
RNs should decide independently of doctors what nursing care is appropriate for their patients (n=1698)	DN	38	4.9	52	5.6	90	5.3	χ^2 =18.462
	D	503	64.9	505	54.7	1008	59.4	p<0.001
	A	234	30.2	366	39.7	600	35.3	2*df*
All nursing staff should comfort and reassure patients emotionally (n=1697)	DN	6	0.8	16	1.7	22	1.3	χ^2 =24.506
	D	37	4.7	99	10.8	136	8.0	p<0.001
	A	736	94.5	803	87.5	1539	90.7	2*df*
The patient's family solely provides all the emotional support the patient needs (n=1696)	DN	35	4.5	44	4.8	79	4.7	χ^2 =15.144
	D	455	58.4	450	49.1	905	53.4	p=0.001
	A	289	37.1	423	46.1	712	42.0	2*df*
In general, RNs are knowledgeable enough to discuss required care with the family if the patient is dependent (n=1694)	DN	37	4.8	74	8.0	111	6.6	χ^2 =8.262
	D	163	21.1	208	22.5	371	21.9	p=0.016
	A	571	74.1	641	69.4	1212	71.5	2*df*
Only RNs should explain forthcoming procedures or investigations to the patient (n=1703)	DN	57	7.3	76	8.2	133	7.8	χ^2 =16.464
	D	557	71.6	579	62.6	1136	66.7	p<0.001
	A	164	21.1	270	29.2	434	25.5	2*df*

DN: don't know, D, disagree, A: agree

There were significant differences regarding the roles of different healthcare personnel by the Stages of Change relating to physical exercise in 11 out of 20 items (See Table 6.26). There was a general consensus across the Stages of Change relating to physical exercise, however, the strength of agreement varied as can be seen by the different views of the participants who were at the pre-contemplation stage compared to the views of the participants who were at the other stages, for example, "in general, RNs are knowledgeable enough to provide health education relevant to patient's diagnosis and prognosis" (χ^2=22.909, 6*df*, p=0.001).

Table 6.26: Roles of different healthcare personnel by Stages of Change relating to physical exercise

Items		Pre-contemplation		Contemplation		Action		Maintenance		Total		*df*
		n	%	n	%	n	%	n	%	n	%	
There is little if any difference between the range of nursing care activities provided by RNs and practical nurses (n=1610)	DN	22	24.7	195	18.6	17	13.8	54	15.5	288	17.9	χ^2=18.352
	D	35	39.3	310	29.6	27	22.0	108	30.9	480	29.8	p=0.005
	A	32	36.0	544	51.9	79	64.2	187	53.6	842	52.3	6*df*
Doctors should supervise nursing practice and nurses should do what the doctors tell them (n=1617)	DN	8	8.9	16	1.5	3	2.4	13	3.7	40	2.5	χ^2 =33.606
	D	33	36.7	254	24.2	40	31.5	97	27.6	424	26.2	p<0.001
	A	49	54.4	779	74.3	84	66.1	241	68.7	1153	71.3	6*df*
RNs can assess the patient's condition effectively and inform the doctors when required (n=1618)	DN	9	10.0	60	5.7	9	7.2	19	5.4	97	6.0	χ^2 =17.301
	D	33	36.7	264	25.1	41	32.8	113	32.3	451	27.9	p=0.008
	A	48	53.3	729	69.2	75	60.0	218	62.3	1070	66.1	6*df*
Only doctors should discuss the diagnosis with the patient (n=1623)	DN	8	8.9	25	2.4	9	7.1	13	3.7	55	3.4	χ^2 =27.586
	D	34	37.8	267	25.4	35	27.6	82	23.2	418	25.8	p<0.001
	A	48	53.3	761	72.3	83	65.4	258	73.1	1150	70.9	6*df*
RNs should decide independently of doctors what nursing care is appropriate for their patients (n=1617)	DN	4	4.5	54	5.1	10	7.9	15	4.3	83	5.1	χ^2 =20.913
	D	53	59.6	663	63.1	61	48.4	188	53.4	965	59.7	p=0.002
	A	32	36.0	333	31.7	55	43.7	149	42.3	569	35.2	6*df*
Practical nurses can fully cover the place of RNs in his/her absence. (n=1700)	DN	16	18.0	148	14.1	9	7.2	35	10.0	208	12.9	χ^2=22.576
	D	39	43.8	537	51.1	60	48.0	152	43.6	788	48.8	p=0.001
	A	34	38.2	366	34.8	56	44.8	162	46.4	618	38.3	6*df*
Only RNs should give information relating to patient's condition to the family to reduce anxiety (n=1618)	DN	9	10.1	64	6.1	12	9.4	20	5.6	105	6.5	χ^2 =12.877
	D	54	60.7	677	64.6	71	55.9	203	57.3	1005	62.1	p=0.045
	A	26	29.2	307	29.3	44	34.6	131	37.0	508	31.4	6*df*
The patient's family solely provides all the emotional support the patient needs (n=1616)	DN	8	9.0	34	3.2	8	6.3	23	6.5	73	4.5	χ^2 =19.606
	D	51	57.3	582	55.5	70	55.6	165	46.9	868	53.7	p=0.003
	A	30	33.7	433	41.3	48	38.1	164	46.6	675	41.8	6*df*
In general, RNs are knowledgeable enough to provide health education relevant to patient's diagnosis and prognosis (n=1612)	DN	9	10.2	95	9.1	18	14.3	27	7.6	149	9.2	χ^2 =22.909
	D	42	47.7	372	35.6	43	34.1	97	27.5	554	34.4	p=0.001
	A	37	42.0	578	55.3	65	51.6	229	64.9	909	56.4	6*df*
In general, RNs are knowledgeable enough to discuss required care with the family if the patient is dependent. (n=1696)	DN	8	9.0	60	5.7	13	10.2	25	7.1	106	6.6	χ^2 =19.095
	D	28	31.5	203	19.4	35	27.6	84	23.9	350	21.7	p=0.004
	A	53	59.6	783	74.9	79	62.2	243	69.0	1158	71.7	6*df*
Only RNs should explain forthcoming procedures or investigations to the patient (n=1622)	DN	10	11.2	80	7.6	8	6.3	26	7.4	124	7.6	χ^2 =31.491
	D	51	57.3	752	71.4	77	60.6	209	59.2	1089	67.1	p<0.001
	A	28	31.5	221	21.0	42	33.1	118	33.4	409	25.2	6*df*

DN: don't know, D, disagree, A: agree

6.6 General health promotion by Registered Nurses from the views of Registered Nurses

In the following section, the RNs' views related to health promotion are presented. The general health promotion by RNs scale comprises three sub-scales (i.e. responsibilities, perceptions and constraints). The findings of each sub-scale are presented and compared by demographic data, healthcare sector, healthcare facility and personal health behaviour data. Additionally, the views of the RNs on the roles of different healthcare personnel (20 items) are presented by healthcare sector, healthcare facility, CVD knowledge and personal health behaviour data.

6.6.1 Responsibilities sub-scale

The mean score of the RNs (n=676) for this sub-scale (i.e. six items) was 18.80 (SD: 2.21; range: 11-24), indicating that most of the RNs reported positive views regarding their responsibilities in health promotion. The total scores did not significantly differ by gender; age group; healthcare sector; healthcare facility; nursing training in exercise; smoking cessation or weight management; and qualifications. The total scores were significantly associated with the Stages of Change relating to physical exercise (p=0.001) and exercise barriers (p=0.010). The RNs who were at the pre-contemplation stage relating to physical exercise gave less positive ratings regarding their responsibilities in health promotion compared to those who were at the contemplation, action and maintenance stages (F=5.342, 3,631df, p=0.001). The RNs who perceived fewer barriers to undertaking exercise gave more positive ratings regarding their responsibilities in health promotion compared to those who perceived more barriers (t=2.583, 670df, p=0.010).

- **Responsibilities sub-scale items by age, gender and RNs training in health promotion**

There were statistically significant differences regarding the responsibilities sub-scale items between the RNs in relation to age, gender and RNs training in health promotion. The RNs who agreed that "the RN should take more responsibility for health promotion" were more likely to hold a BSN degree compared to those having either MSc or PhD degree (χ^2=7.388, 1*df*, *p*=0.007). The male RNs were more likely to strongly agree that "the RN is the appropriate health personnel to get involved in health promotion" compared to the female RNs (χ^2=7.838, 3*df*, *p*=0.049). For the item of "the RN should only provide health promotion counselling if it is requested by the physicians", more RNs aged 20-29 years strongly agreed compared to those in the other age groups (χ^2=6.887, 2*df*, *p*=0.032), whereas more female RNs disagreed regarding this item compared to the male RNs (χ^2=16.322, 3*df*, *p*=0.001). The RNs who reported having training in promoting exercise were more likely to disagree that "the RN should only provide health promotion counselling if it is requested by the physicians" compared to those who reported having no training (χ^2=10.622, 1*df*, *p*=0.001). The male RNs (χ^2=4.028, 1*df*, *p*=0.045) and those aged 20-39 years (χ^2=17.590, 6*df*, *p*=0.007) were more likely to disagree that "the RN should give priority to acute care rather than health education and counselling" compared to their counterparts.

6.6.1.1 Responsibilities sub-scale items by healthcare sector

There were no significant differences by healthcare sector for the six items of the responsibilities sub-scale.

6.6.1.2 Responsibilities sub-scale items by healthcare facility

There were no significant differences across the different healthcare facilities for the six items of the responsibilities sub-scale.

6.6.1.3 Responsibilities sub-scale items by CVD knowledge items

There were significant differences by CVD knowledge for five out of the six items of the responsibilities sub-scale (See Table 6.27). There was general consensus regarding the RNs' responsibilities in health promotion by CVD knowledge, however, the strength of agreement varied as can be seen by the different views of the RNs who had adequate and high levels of knowledge compared to those who had less knowledge. As indicated in Table 6.27, the RNs who had higher knowledge of CVD gave more positive ratings regarding their responsibilities in health promotion compared with those who had lower knowledge of CVD (e.g. "the RN should only provide health promotion counselling if it is requested by the physician"; χ^2=40.355, 6*df*, *p*<0.001).

Table 6.27: General health promotion by CVD knowledge: responsibilities sub-scale

Items		Less knowledge		Adequate knowledge		High knowledge		Total		*df*
		n	%	n	%	n	%	n	%	
The RN should be a health advocate, insisting that preventive health is put on the political agenda (n=675)	SD/ D/A	18	51.4	108	33.3	85	26.9	211	31.3	χ^2 =10.071 *p*=0.007 2*df*
	SA	17	48.6	216	66.7	231	73.1	464	68.7	
The RN should take more responsibility for health promotion (n=675)	D	7	20.6	19	5.8	10	3.2	36	5.3	χ^2 =20.049 *p*<0.001 4*df*
	A	15	44.1	164	50.5	151	47.8	330	48.9	
	SA	12	35.3	142	43.7	155	49.1	309	45.8	
The RN is the most appropriate health personnel to get involved in health promotion (n=674)	SD/ D/A	11	32.4	47	14.5	56	17.8	114	16.9	χ^2 =7.325 *p*=0.026 2*df*
	SA	23	67.6	278	85.5	259	82.2	560	83.1	
The RN should only provide health promotion counselling if it is requested by the physician (n=676)	SD	10	28.6	99	30.5	129	40.8	238	35.2	χ^2 =40.355 *p*<0.001 6*df*
	D	12	34.3	162	49.8	161	50.9	335	49.6	
	A	10	28.6	31	9.5	16	5.1	57	8.4	
	SA	3	8.6	33	10.2	10	3.2	46	6.8	
The patient is totally responsible to promote his/her health (n=675)	SD	183	27.1	167	36.8	155	26.6	505	29.5	χ^2 =24.838 *p*<0.001 6*df*
	D	284	42.1	189	41.6	202	34.6	675	39.4	
	A	115	17.0	71	15.6	147	25.2	333	19.5	
	SA	93	13.8	27	5.9	79	13.6	199	11.6	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

6.6.2 Perceptions sub-scale

The mean score for the RNs (n=676) perceptions sub-scale (i.e. nine items) was 24.17 out of 36 (SD: 4.07; range: 2-34) indicating that the RNs reported varied views about their perceptions of health promotion. There were no significant differences regarding the RNs' perceptions for health promotion by their age, field of clinical practice, nursing training in smoking cessation and weight management, healthcare sector, and healthcare facility. The female RNs gave more positive ratings regarding perceptions of health promotion compared to the male RNs (t=3.197, 668df, p=0.001). The RNs who had received training in exercise promotion gave more positive ratings regarding perceptions of health promotion compared to those who received no such training (t=2.449, 507df, p=0.015). In addition, the RNs who had higher CVD knowledge gave more positive ratings regarding perceptions of health promotion compared to those who had lower CVD knowledge (F=10.301, 2,673df, p<0.001).

The total perceptions scores were statistically significant associated with the Stages of Change relating to physical exercise (p<0.001), exercise barriers (p=0.010) and smoking status (p<0.001). The RNs who were at the contemplation and maintenance stages relating to physical exercise gave more positive ratings regarding their perceptions of health promotion compared to those who were at the pre-contemplation and action stages (F=10.202, 3,631df, p<0.001). The RNs who perceived fewer barriers to undertaking exercise gave more positive ratings regarding their perceptions of health promotion compared to those who perceived more barriers (t=5.606, 670df, p<0.001). The RNs who never smoked gave more positive ratings regarding their perceptions of health promotion than those who were current smokers (F=6.591, 2,668df, p=0.001).

- **Perceptions sub-scale items by age, gender and RN training in health promotion**

There were no statistically significant differences regarding perceptions sub-scale items between the RNs relating to age and gender. With regard to the RN training in health promotion, the RNs who reported having training in smoking cessation (χ^2=7.555, 1*df*, *p*=0.006) and promoting exercise (χ^2=7.383, 1*df*, *p*=0.007) were more likely to disagree that "the patient gets annoyed when the RN asks him/her about health-related behaviours especially when it is not directly related to his/her presenting health problems".

6.6.2.1 Perceptions subscale items by healthcare sector

There were no significant differences regarding the RNs' perceptions of health promotion in relation to healthcare sector.

6.6.2.2 Perceptions sub-scale items by healthcare facility

There was a significant difference regarding the RNs' perceptions of health promotion by healthcare facility in one out of the nine items. More RNs recruited from primary healthcare centres significantly disagreed that "the patient does not take any notice of what the RN says about changing lifestyle" (χ^2=12.575, 6*df*, *p*=0.050) compared to those employed in the general hospitals and the cardiac institute.

6.6.2.3 Perceptions sub-scale items by CVD knowledge items

There were significant differences regarding the perceptions of health promotion by disease knowledge for five out of the nine items (Table 6.28). There was no consensus across the different levels of CVD knowledge, for example, more RNs who had less CVD knowledge disagreed with the perceptions of health promotion compared to those

who had adequate and high levels of CVD knowledge (e.g. "the RN finds health promotion dull and boring"; χ^2=37.669, 6*df*, *p*<0.001).

Table 6.28: General health promotion by CVD knowledge items: perceptions sub-scale

Items		Less knowledge		Adequate knowledge		High knowledge		Total		*df*
		n	%	n	%	n	%	n	%	
The RN finds health promotion dull and boring (n=675)	SD	7	20.0	95	29.2	124	39.4	226	33.5	χ^2=37.669 *p*<0.001 6*df*
	D	12	34.3	168	51.7	154	48.9	334	49.5	
	A	9	25.7	36	11.1	30	9.5	75	11.1	
	SA	7	20.0	26	8.0	7	2.2	40	5.9	
The RN should not interfere with the patient's life telling him/her to change his/her health related behaviour. (n=673)	SD	8	22.9	90	27.8	126	40.1	224	33.3	χ^2=37.672 *p*<0.001 6*df*
	D	13	37.1	178	54.9	158	50.3	349	51.9	
	A	12	34.3	39	12.0	19	6.1	70	10.4	
	SA	2	5.7	17	5.2	11	3.5	11	3.5	
The patient's lifestyle is conditioned by his/her culture and environment; there is not much that the RN can do to change them. (n=671)	SD	5	14.3	32	9.9	52	16.6	89	13.3	χ^2=21.163 *p*=0.002 6*df*
	D	12	34.3	157	48.8	176	56.1	345	51.4	
	A	16	45.7	110	34.2	73	23.2	199	29.7	
	SA	2	5.7	23	7.1	13	4.1	38	5.7	
Helping the patients to understand how health-related behaviours interfere with health is an important part of the RNs' duty (n=670)	SD/ D	12	34.3	36	11.2	20	6.4	68	10.1	χ^2=27.679 *p*<0.001 2*df*
	A/ SA	23	65.7	285	88.8	294	93.6	602	89.9	
Patients find health promotion dull and boring (n=669)	SD	2	5.9	41	12.7	39	12.5	82	12.3	χ^2=13.219 *p*=0.040 6*df*
	D	10	29.4	163	50.3	153	49.2	326	48.7	
	A	19	55.9	93	28.7	102	32.8	214	32.0	
	SA	3	8.8	27	8.3	17	5.5	47	7.0	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

6.6.3 Constraints sub-scale

The total sample (n=674) mean score for the constraints sub-scale (four items) was 9.93 out of 16 (SD: 2.21; range: 4-16), indicating that the RNs reported varied views about constraints to health promotion. The total scores were not significantly related to healthcare sector, nursing training in smoking cessation, exercise and weight management. However, the RNs employed in primary healthcare centres reported higher constraints ratings compared to those recruited from the general hospitals and the cardiac institute (*F*=4.227, 2,672*df*, *p*=0.015). The older RNs (40 years and over)

reported higher constraints ratings compared to the younger RNs (F=3.307, 2,668df, p=0.037). The female RNs were more likely to report higher constraints ratings compared to the male RNs (t=2.584, 668df, p=0.010).

In terms of the personal health behaviour data of the RNs, there were statistically significant differences in the constraints scores relating to the Stages of Change relating to physical exercise (p<0.001) and exercise barriers (p<0.001). The RNs who were at the contemplation and maintenance stages relating to physical exercise gave higher constraints ratings compared to those at the pre-contemplations and action stages (F=7.679, 3,631df, p<0.001). The RNs who perceived fewer barriers to undertaking exercise gave more positive ratings regarding their perceptions of health promotion compared to those who perceived more barriers (t=4.646, 670df, p<0.001).

- **Constraints sub-scale items by age and gender**

There were statistically significant differences regarding perceptions sub-scale items between the RNs in relation to their age and gender. The RNs aged 20-29 years were more likely to agree that "RNs do not have enough time to carry out health promotion" compared to those aged 40 years and over (χ^2=23.227, 6df, p=0.001). The RNs aged 20-29 years and those aged 40 years and over were more likely to disagree that "RNs do not have the necessary skills to promote health" (χ^2=23.227, 6df, p=0.001) compared to those aged 30-39 years.

6.6.3.1 Constraints sub-scale items by healthcare sector

There were no significant differences by healthcare sector for all items of the constraint sub-scale.

6.6.3.2 Constraints sub-scale items by healthcare facility

There were significant differences by healthcare facility for only one item of the constraints sub-scale. More RNs employed in primary healthcare centres disagreed that "RNs do not have enough time to carry out health promotion" (χ^2=15.438, 6*df*, *p*=0.017), compared to those employed in the other healthcare facilities.

6.6.3.3 Constraints sub-scale items by CVD knowledge items

There were significant differences by disease knowledge for two out of the four items of the constraints sub-scale (See Table 6.29). There was no consensus regarding the constraints to health promotion by RNs' CVD knowledge. A greater proportion of the RNs who had less CVD knowledge reported more constraints to health promotion compared to those who had adequate and high levels of CVD knowledge (e.g. "the RNs do not speak the patient's language to be able to promote health"; χ^2=24.033, 6*df*, *p*=0.001).

Table 6.29: General health promotion by CVD knowledge items: constraints sub-scale

Items		Less knowledge		Adequate knowledge		High knowledge		Total		*df*
		n	%	n	%	n	%	n	%	
RNs do not speak the patient's language to be able to promote health (n=674)	SD	3	8.6	49	15.1	50	15.9	102	15.1	χ^2=24.033 *p*=0.001 6*df*
	D	13	37.1	176	54.3	188	59.7	377	55.9	
	A	11	31.4	73	22.5	65	20.6	149	22.1	
	SA	8	22.9	26	8.0	12	3.8	46	6.8	
RNs have very limited knowledge about patient's culture to be able to promote health (n=672)	SD	0	0.0	41	12.7	47	15.0	88	13.1	χ^2=22.781 *p*<0.001 6*df*
	D	11	31.4	158	48.9	151	48.1	320	47.6	
	A	16	45.7	91	28.2	98	31.2	205	30.5	
	SA	8	22.9	33	10.2	18	5.7	59	8.8	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

6.7 Views of Registered Nurses regarding roles of different healthcare personnel

The views of the RNs about roles of different healthcare personnel are presented relating to the healthcare sector, healthcare facility and personal health behaviour data. This scale comprised 20 items.

6.7.1 Roles of different healthcare personnel by Registered Nurses from different healthcare sectors

As indicated in Table 6.30, there were significant differences regarding the roles of different healthcare personnel across the healthcare sectors in five out of 20 items. There was a general consensus across the different healthcare sectors about the roles of different healthcare personnel, however, the strength of agreement varied as can be seen by the different views of the RNs employed in the public sector, compared to those employed in the private sector and the RMS (e.g. "practical nurses can fully cover the place of RNs in his/her absence"; χ^2=22.451, 4*df*, p<0.001).

Table 6.30: Roles of different healthcare personnel by RNs from different healthcare sector

Items		Public		Private		RMS		Total		*df*
		n	%	n	%	n	%	n	%	
Only RNs should discuss prescribed medications with patients or the family (n=669)	DN	7	2.8	4	2.2	6	2.5	17	2.5	χ^2 =31.483
	D	195	77.4	105	58.0	132	55.9	432	64.6	p<0.001
	A	50	19.8	72	39.8	98	41.5	220	32.9	4*df*
Only RNs should give prescribed medications (n=665)	DN	9	3.6	2	1.1	6	2.6	17	2.6	χ^2 =44.839
	D	105	42.2	45	24.9	39	16.6	189	28.4	p<0.001
	A	135	54.2	134	74.0	190	80.9	459	69.0	4*df*
Practical nurses can fully cover the place of RNs in his/her absence (n=670)	DN	8	3.1	8	4.4	12	5.1	28	4.2	χ^2 =22.451
	D	132	52.0	122	67.4	161	68.5	415	61.9	p<0.001
	A	114	44.9	51	28.2	62	26.4	227	33.9	4*df*
In general, RNs are knowledgeable enough to provide health education relevant to patient's diagnosis and prognosis (n=670)	DN	8	3.1	8	4.4	15	6.4	31	4.6	χ^2 =11.447
	D	86	33.9	48	26.4	50	21.4	184	27.5	p=0.022
	A	160	63.0	126	69.2	169	72.2	455	67.9	4*df*
In general, RNs are able to describe concisely and accurately patient's condition to other healthcare team members (n=669)	DN	8	3.1	3	1.7	7	3.0	18	2.7	χ^2 =12.161
	D	69	27.2	38	21.1	35	14.9	142	21.2	p=0.016
	A	177	69.7	139	77.2	193	82.1	509	76.1	4*df*

DN: don't know, D, disagree, A: agree

6.7.2 Roles of different healthcare personnel by Registered Nurses from different healthcare facilities

The findings suggested that there were significant differences regarding the roles of different healthcare personnel across the healthcare facilities in 10 out of 20 items. As shown in Table 6.31, there was no consensus across the different healthcare facilities as can be seen by the different views of the RNs recruited from primary healthcare centres, compared to those recruited in the general hospitals and the cardiac institute (e.g. "only RNs should give information relating to patient's condition to the family to reduce anxiety"; χ^2=16.418, 2*df*, p<0.001).

Table 6.31: Roles of different healthcare personnel by RNs from different healthcare facilities

Items		General hospitals		Cardiac institute		Primary healthcare centres		Total		*df*
		n	%	n	%	n	%	n	%	
Only RNs should discuss prescribed medications with patients or the family (n=652)	D	311	64.5	53	58.9	68	85.0	432	66.3	χ^2 =15.404 p<0.001 2*df*
	A	171	35.5	37	41.1	12	15.0	220	33.7	
Only RNs should give prescribed medications (n=648)	D	119	24.8	16	17.8	54	69.2	189	29.2	χ^2 =70.699 p<0.001 2*df*
	A	361	75.2	74	82.2	24	30.8	459	70.8	
Doctors should supervise nursing practice and nurses should do what the doctors tell them (n=659)	D	261	53.5	51	56.7	27	33.3	339	51.4	χ^2 =12.431 p=0.002 2*df*
	A	227	46.5	39	43.3	54	66.7	320	48.6	
RNs can assess the patient's condition effectively and inform the doctors when required (n=647)	D	74	15.5	8	9.0	27	33.8	109	16.8	χ^2 =20.876 p<0.001 2*df*
	A	404	84.5	81	91.0	53	66.3	538	83.2	
RNs should decide independently of doctors what nursing care is appropriate for their patients (n=647)	D	232	48.4	37	43.0	60	73.2	329	50.9	χ^2 =19.573 p<0.001 2*df*
	A	247	51.6	49	57.0	22	26.8	318	49.1	
Practical nurses can fully cover the place of RNs in his/her absence. (n=642)	D	317	66.7	69	79.3	29	36.3	415	64.6	χ^2 =37.317 p<0.001 2*df*
	A	158	33.3	18	20.7	51	63.8	227	35.4	
Only RNs should give information relating to patient's condition to the family to reduce anxiety (n=638)	D	309	65.7	59	65.6	69	88.5	437	68.5	χ^2 =16.418 p<0.001 2*df*
	A	161	34.3	31	34.4	9	11.5	201	31.5	
In general, RNs are knowledgeable enough to assess the patient's educational status prior providing information (n=633)	D	104	22.3	12	13.5	27	34.6	143	22.6	χ^2 =10.691 p=0.005 2*df*
	A	362	77.7	77	86.5	51	65.4	490	77.4	
In general, RNs are knowledgeable enough to provide health education relevant to patient's diagnosis and prognosis (n=639)	D	134	28.5	17	19.3	33	41.3	184	28.8	χ^2 =9.935 p=0.007 2*df*
	A	337	71.5	71	80.7	47	58.8	455	71.2	
In general, RNs are able to describe concisely and accurately patient's condition to other healthcare team members (n=651)	D	94	19.5	16	18.0	32	40.5	142	21.8	χ^2 =18.520 p<0.001 2*df*
	A	389	80.5	73	82.0	47	59.5	509	78.2	

D, disagree, A: agree

6.7.3 Roles of different healthcare personnel by Registered Nurses and CVD knowledge items

As shown in Table 6.32, there was no consensus regarding the roles of different healthcare personnel by different levels of CVD knowledge as can be seen by the different views of the RNs who possessed less CVD knowledge, compared to those who had adequate and high levels of CVD knowledge (e.g. "in general, RNs are knowledgeable enough to discuss required care with the family if the patient is dependent"; χ^2=30.697, 4*df*, p<0.001).

Table 6.32: Roles of different healthcare personnel and CVD knowledge items

Items		Less knowledge		Adequate knowledge		High knowledge		Total		*df*
		n	%	n	%	n	%	n	%	
Only RNs should give prescribed medications (n=665)	DN	3	8.6	11	3.5	3	1.0	17	2.6	χ^2=18.171
	D	17	48.6	87	27.4	85	27.2	189	28.4	p=0.001
	A	15	42.9	220	69.2	224	71.8	459	69.0	4*df*
RNs can assess the patient's condition effectively and inform the doctors when required (n=667)	DN	2	5.7	9	2.8	9	2.9	20	3.0	χ^2 =17.790
	D	14	40.0	53	16.5	42	13.5	109	16.3	p=0.001
	A	19	54.3	259	80.7	260	83.6	538	80.7	4*df*
Practical nurses can fully cover the place of RNs in his/her absence (n=670)	DN	2	5.7	20	6.2	6	1.9	28	4.2	χ^2 =27.490
	D	18	51.4	171	53.3	226	72.0	415	61.9	p<0.001
	A	15	42.9	130	40.5	82	26.1	227	33.9	4*df*
The patient's family solely provides all the emotional support the patient needs (n=670)	DN	6	17.1	12	3.8	13	4.1	31	4.6	χ^2 =18.350
	D	18	51.4	154	48.1	177	56.2	349	52.1	p=0.001
	A	11	31.4	154	48.1	125	39.7	290	43.3	4*df*
In general, RNs are knowledgeable enough to assess the patient's educational status prior providing information (n=668)	DN	7	20.0	18	5.6	10	3.2	35	5.2	χ^2 =33.229
	D	15	42.9	70	21.9	58	18.5	143	21.4	p<0.001
	A	13	37.1	232	72.5	245	78.3	490	73.4	4*df*
In general, RNs are knowledgeable enough to provide health education relevant to patient's diagnosis and prognosis (n=670)	DN	4	11.4	15	4.7	12	3.8	31	4.6	χ^2 =16.833
	D	18	51.4	83	25.9	83	26.4	184	27.5	p=0.002
	A	13	37.1	223	69.5	219	69.7	455	67.9	4*df*
In general, RNs are knowledgeable enough to consult patient (and family if relevant) regarding planned care (n=671)	DN	4	11.4	12	3.7	13	4.1	29	4.3	χ^2 =24.448
	D	19	54.3	71	22.0	81	25.8	171	25.5	p<0.001
	A	12	34.3	239	74.2	220	70.1	471	70.2	4*df*
In general, RNs are knowledgeable enough to discuss required care with the family if the patient is dependent (n=672)	DN	5	14.3	10	3.1	9	2.9	24	3.6	χ^2 =30.697
	D	15	42.9	60	18.6	49	15.6	124	18.5	p<0.001
	A	15	42.9	252	78.3	257	81.6	524	78.0	4*df*

DN: don't know, D, disagree, A: agree

6.7.4 Roles of different healthcare personnel by personal health behaviour data

There were significant differences regarding the roles of different healthcare personnel across the range of personal health behaviour data. More non-smokers than smokers and those who had smoked in the past agreed that "in general, RNs are knowledgeable enough to discuss required care with the family if the patient is dependent" (χ^2=14.331, 4*df*, *p*=0.006). However, more smokers disagreed that "all nursing staff should comfort and reassure patients emotionally (χ^2=14.331, 4*df*, *p*=0.006), compared to the non-smoker RNs and those who had smoked in the past. More RNs who had smoked in the past agreed that "RNs should decide independently of doctors what nursing care is appropriate for their patients" (χ^2=19.094, 4*df*, *p*=0.001) compared to the smokers and no-smokers. More non-smokers and those who smoked in the past agreed that "RNs can assess the patient's condition effectively and inform the doctors when required" (χ^2=11.939, 4*df*, *p*=0.018) compared to the smokers.

As shown in Table 6.33, there was a general consensus regarding the roles of different healthcare personnel by RNs' perceptions of body weight size; however, the strength of agreement varied as can be seen by the different views of the RNs who perceived themselves as overweight, body size compared to those who perceived themselves as normal or below normal body weight size (e.g. "in general, RNs are knowledgeable enough to discuss required care with the family if the patient is dependent"; χ^2=18.146, 4*df*, *p*<0.001).

Table 6.33: Roles of different healthcare personnel and perceived body weight size

Items		Below normal body weight size		Normal body weight size		Overweight body size		Total		*df*
		n	%	n	%	n	%	n	%	
All nursing staff should comfort and reassure patients emotionally (n=650)	D/DN	24	6.9	27	17.9	16	10.5	67	10.3	χ^2 =13.624 p=0.001 2*df*
	A	322	93.1	124	82.1	137	89.5	583	89.7	
In general, RNs are knowledgeable enough to discuss required care with the family if the patient is dependent (n=659)	DN	4	1.1	9	5.9	10	6.5	23	3.5	χ^2=18.146 p<0.001 4*df*
	D	60	17.0	23	15.0	37	24.0	120	18.2	
	A	288	81.8	121	79.1	107	69.5	516	78.3	

DN: don't know, D, disagree, A: agree

Furthermore, there was a general consensus regarding the roles of different healthcare personnel by the RNs' perceptions of exercise barriers, however, the strength of agreement varied as can be seen by the different views of the RNs who reported more exercise barriers, compared to those who reported fewer exercise barriers (e.g. "only RNs should explain forthcoming procedures or investigations to the patient"; χ^2=19.269, 2*df*, p<0.001) (See Table 6.34).

Table 6.34: Roles of different healthcare personnel and perceptions

Items		Few exercise barriers		More exercise barriers		Total		*df*
		n	%	n	%	n	%	
Only doctors should carry out physical assessments of patients (n=666)	DN	6	2.3	12	2.9	18	2.7	χ^2=12.964 p=0.002 2*df*
	D	207	80.9	280	68.3	487	73.1	
	A	43	16.8	118	28.8	161	24.2	
Only RNs should discuss prescribed medications with patients or the family (n=667)	DN	7	2.7	10	2.4	17	2.5	χ^2 =10.854 p=0.004 2*df*
	D	184	71.9	246	59.9	430	64.5	
	A	65	25.4	155	37.7	220	33.0	
All nursing staff should comfort and reassure patients emotionally (n=668)	DN	1	0.4	8	1.9	9	1.3	χ^2 =16.696 p<0.001 2*df*
	D	12	4.7	55	13.4	67	10.0	
	A	244	94.9	348	84.7	592	88.6	
Only RNs should give information relating to patient's condition to the family to reduce anxiety (n=670)	DN	9	3.5	25	6.1	34	5.1	χ^2 =7.344 p=0.025 2*df*
	D	183	71.2	253	61.3	436	65.1	
	A	65	25.3	135	32.7	200	29.9	
The patient's family solely provides all the emotional support the patient needs (n=668)	DN	8	3.1	23	5.6	31	4.6	χ^2=10.843 p=0.004 2*df*
	D	154	59.9	194	47.2	348	52.1	
	A	95	37.0	194	47.2	289	43.3	
In general, RNs are knowledgeable enough to consult patient (and family if relevant) regarding planned care. (n=669)	DN	5	2.0	23	5.6	28	4.2	χ^2 =6.788 p=0.034 2*df*
	D	60	23.4	111	26.9	171	25.6	
	A	191	74.6	279	67.6	470	70.3	
In general, RNs are knowledgeable enough to discuss required care with the family if the patient is dependent (n=670)	DN	1	0.4	23	5.6	24	3.6	χ^2 =14.258 p=0.001 2*df*
	D	42	16.4	82	19.8	124	18.5	
	A	213	83.2	309	74.6	522	77.9	

Items		Few exercise barriers		More exercise barriers		Total		*df*
		n	**%**	**n**	**%**	**n**	**%**	
In general, RNs are able to describe concisely and accurately patient's condition to other healthcare team members.(n=668)	DN	3	1.2	14	3.4	17	2.5	χ^2 =9.233
	D	68	26.5	74	18.0	142	21.3	p=0.010
	A	186	72.4	323	78.6	509	76.2	2*df*
Only RNs should explain forthcoming procedures or investigations to the patient (n=670)	DN	7	2.7	19	4.6	26	3.9	χ^2 =19.269
	D	209	81.3	271	65.6	480	71.6	p<0.001
	A	41	16.0	123	29.8	164	24.5	2*df*

DN: don't know, D, disagree, A: agree

Chapter Seven

Findings Three: Health Promotion relating to CVD from Views of the Registered Nurses, Doctors and Patients

7.1 Introduction

This chapter presents the findings from the RNs, the doctors and the patients relating to the health promotion and CVD scale (15 items) to measure the participants' views regarding the RNs' role in physical exercise, smoking cessation, and weight management. Higher scores reflect more positive views regarding the role of RNs in health promotion relating to CVD.

7.2 Overall views on health promotion regarding CVD by Registered Nurses

Among the total sample of the RNs, the doctors and the patients (n=1,721), the mean score for health promotion regarding CVD by RNs was 43.63 (SD: 5.59; range: 22-60), indicating that most of the participants reported positive views regarding health promotion by RNs in relation to CVD.

There were statistically significant associations between the total score and sample group (p=0.001), healthcare sector (p=0.001), healthcare facility (p=0.009) and gender (p=0.001). However, the total score was not related to age or perceived body weight size. The patients gave less positive ratings regarding the health promotion by RNs relating to CVD than the doctors and the RNs (F=6.755, 2,1718*df*, p=0.001). The participants recruited from the private sector gave less positive ratings than those recruited from the public sector and the RMS (F=7.603, 2,1718*df*, p=0.001). The participants recruited from the primary healthcare centres and the cardiac institute gave more positive ratings than those recruited from the general hospitals (F=4.769,

2,1718*df*, p=0.009). In terms of gender, the female participants gave more positive ratings than the male participants (t=3.323, 1706*df*, p=0.001).

In addition, the participants' views on health promotion by RNs regarding CVD differed significantly by personal health behaviour data, including smoking status (p<0.001), Stages of Change relating to physical exercise (p<0.001) and perceptions of barriers to exercise (p<0.001). In terms of smoking status, the participants who never smoked gave more positive ratings compared to the current smokers and the past smokers (F=8.884, 2,1703*df*, p<0.001). Regarding the perceptions of exercise barriers, the participants who perceived fewer barriers to doing physical exercise gave more positive ratings regarding health promotion by RNs relating to CVD than those who perceived more barriers to undertaking exercise (t=7.596, 1711*df*, p<0.001). Additionally, the participants who were at the pre-contemplation stage relating to physical exercise gave less positive ratings than those who were at the contemplation, action and maintenance stages (F=13.226, 3,1628*df*, p<0.001).

- **Registered Nurses' views of health promotion relating to CVD by personal health behaviour data**

The section reports on the differences between the RNs' views on health promotion relating to CVD in relation to their personal health behaviour data. As Table 7.1 shows, there were statistically significant differences by smoking status. The RNs who had never smoked were more likely to report different views compared to those who were smokers or past smokers. For example, "the RN should only counsel patients about weight management if linked with their presenting health problems" (p=0.004).

Table 7.1: Registered Nurses' views of health promotion regarding CVD and smoking status

Items		Never smoked		Smoked in the past		Current smoker		Total		*df*
		n	%	n	%	n	%	n	%	
Promoting smoking cessation is important in nursing practice (n=671)	D	23	5.8	1	1.4	19	9.6	43	6.4	χ^2=6.733 p=0.035 2*df*
	A	377	94.2	72	98.6	179	90.4	628	93.6	
The RN should only counsel patients to quit smoking if linked with their presenting health problems (n=669)	SD	78	19.5	9	12.3	21	10.7	108	16.1	χ^2=17.131 p=0.009 6*df*
	D	185	46.4	29	39.7	85	43.1	299	44.7	
	A	86	21.6	20	27.4	48	24.4	154	23.0	
	SA	50	12.5	15	20.5	43	21.8	108	16.1	
The RN should encourage as many patients as possible to quit smoking (n=669)	D	19	4.8	2	2.7	21	10.6	42	6.3	χ^2=9.387 p=0.009 2*df*
	A	379	95.2	71	97.3	177	89.4	627	93.7	
The RN should only counsel patients about physical activity if linked with their presenting health problems (n=669)	SD	39	9.8	7	9.6	22	11.1	68	10.2	χ^2=16.233 p=0.013 6*df*
	D	220	55.3	34	46.6	83	41.9	337	50.4	
	A	104	26.1	24	32.9	57	28.8	185	27.7	
	SA	35	8.8	8	11.0	36	18.2	79	11.8	
The RN should discuss physical activity only if the patient mentions it (n=668)	SD	20	5.0	4	5.5	7	3.6	31	4.6	χ^2=12.911 p=0.044 6*df*
	D	172	43.2	28	38.4	85	43.1	285	42.7	
	A	172	43.2	25	43.2	79	40.1	276	41.3	
	SA	34	8.5	16	21.9	26	13.2	76	11.4	
The RN should only counsel patients about weight management if linked with their presenting health problems (n=666)	SD	29	7.3	10	13.7	13	6.6	52	7.8	χ^2=19.327 p=0.004 6*df*
	D	220	55.4	25	34.2	85	43.4	330	49.5	
	A	113	28.5	31	42.5	72	36.7	216	32.4	
	SA	35	8.8	7	9.6	26	13.3	68	10.2	
The RN should discuss weight management only if the patient mentions it (n=663)	SD	25	6.3	6	8.2	8	4.1	39	5.9	χ^2=14.155 p=0.028 6*df*
	D	186	47.1	27	37.0	79	40.5	292	44.0	
	A	153	38.7	26	35.6	81	41.5	260	39.2	
	SA	31	7.8	14	19.2	27	13.8	72	10.9	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

In addition, there were statistically significant differences in the RNs' views by the Stages of Change relating to physical exercise (See Table 7.2). The RNs who were at the pre-contemplation stage were more likely to report different views positive on health promotion by RNs relating to CVD than those who were at the contemplation, action and maintenance stages. For example, "the RN has sufficient knowledge to counsel patients to quit smoking and about the consequences of continued smoking" (p=0.002).

Table 7.2: Registered Nurses' views of health promotion regarding CVD and Stages of Change relating to physical exercise

Items		Pre-contemplation		Contemplation		Action		Maintenance		Total		*df*
		n	%	n	%	n	%	n	%	n	%	
The RN has sufficient knowledge to counsel patients to quit smoking and about the consequences of continued smoking (n=633)	D	11	34.4	48	11.6	5	9.6	16	11.8	80	12.6	χ^2=14.604 p=0.002 3*df*
	A	21	65.6	365	88.4	47	90.4	120	88.2	553	87.4	
The RN should only counsel patients to quit smoking if linked with their presenting health problems (n=633)	D	16	50.0	277	66.7	25	49.0	71	52.6	389	61.5	χ^2=14.484 p=0.002 3*df*
	A	16	50.0	138	33.3	26	51.0	64	47.4	244	38.5	
The RN should discuss smoking cessation only if the patient mentions it (n=632)	D	9	28.1	215	52.1	16	30.8	58	43.0	298	47.2	χ^2=15.190 p=0.002 3*df*
	A	23	71.9	198	47.9	36	69.2	77	57.0	334	52.8	
The RN should only counsel patients about physical activity if linked with their presenting health problems (n=633)	D	15	46.9	271	65.6	24	46.2	73	53.7	383	60.5	χ^2=14.141 p=0.003 3*df*
	A	17	53.1	142	34.4	28	53.8	63	46.3	250	39.5	
The RN should only counsel patients about weight management if linked with their presenting health problems (n=631)	D	15	46.9	265	64.2	21	41.2	61	45.2	362	57.4	χ^2=22.901 p<0.001 3*df*
	A	17	53.1	148	35.8	30	58.8	74	54.8	269	42.6	
The RN should discuss weight management only if the patient mentions it (n=627)	D	13	41.9	229	55.6	19	38.0	58	43.3	319	50.9	χ^2=11.051 p=0.011 3*df*
	A	18	58.1	183	44.4	31	62.0	76	56.7	308	49.1	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

In terms of exercise barriers, there were statistically significant differences in the views between the RNs who reported fewer barriers and those who reported more barriers to physical exercise (See Table 7.3). For example "the RN should discuss physical activity only if the patient mentions it" (p=0.002).

Table 7.3: Registered Nurses' views of health promotion regarding CVD and perceptions of exercise barriers

Items		Few exercise barriers		More exercise barriers		Total		*df*
		n	%	n	%	n	%	
The RN should only counsel patients to quit smoking if linked with their presenting health problems (n=670)	D	172	66.9	236	57.1	408	60.9	χ^2=6.367 p=0.007 1*df*
	A	85	33.1	177	42.9	262	39.1	
The RN should encourage as many patients as possible to quit smoking (n=670)	D	9	3.5	34	8.3	43	6.4	χ^2=5.995 p=0.009 1*df*
	A	249	96.5	378	91.7	627	93.6	
The RN should only counsel patients about physical activity if linked with their presenting health problems (n=670)	D	175	67.8	231	56.1	406	60.6	χ^2=9.192 p=0.002 1*df*
	A	83	32.2	181	43.9	264	39.4	
The RN should discuss physical activity only if the patient mentions it (n=669)	D	141	55.1	176	42.6	317	47.4	χ^2=9.846 p=0.002 1*df*
	A	115	44.9	237	57.4	352	52.6	
The RN should only counsel patients about weight management if linked with their presenting health problems (n=667)	D	169	66.0	214	52.1	383	57.4	χ^2=12.551 p<0.001 1*df*
	A	87	34.0	197	47.9	284	42.6	
The RN should encourage as many patients to control their weight (n=669)	D	18	7.0	47	11.4	65	9.7	χ^2=3.499 p=0.039 1*df*
	A	239	93.0	365	88.6	604	90.3	
The RN should discuss weight management only if the patient mentions it (n=664)	D	148	58.5	184	44.8	332	50.0	χ^2=11.807 p<0.001 1*df*
	A	105	41.5	227	55.2	332	50.0	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

Additionally, the RNs who reported being underweight or a normal body weight size were more likely to agree that "the RN has sufficient knowledge to counsel patients about weight management" than those with overweight body size (χ^2=8.146, 2*df*, p=0.017).

- **Differences in doctors' views on health promotion by RNs regarding CVD by personal health behaviour data**

The section reports on the doctors' views about health promotion by RNs relating to CVD based on the personal health behaviour data of the doctors. There were statistical significant differences in the doctors' views by their smoking status and Stages of Change relating to physical exercise. The doctors who had never smoked or were past smokers were more likely to agree that "the RN should encourage as many patients as

possible to quit smoking" (χ^2=8.146, 2*df*, *p*=0.017) compared to those who were current smokers. As Table 7.4 shows, there was general consensus regarding the doctors' views of health promotion by RNs relating to CVD and Stages of Change relating to physical exercise, however, the strength of agreement varied as can be seen by the different views of the doctors who were at the pre-contemplation stage versus those who were at the action and maintenance stages (e.g. "the RN should discuss smoking cessation only if the patient mentions it" *p*=0.002).

Table 7.4: Doctors' views of health promotion by Registered Nurses regarding CVD and Stages of Change relating to physical exercise

Items		Pre-contemplation		Contemplation		Action		Maintenance		Total		*df*
		n	%	n	%	n	%	n	%	n	%	
The RN should only counsel patients to quit smoking if linked with their presenting health problems (n=434)	D	14	60.9	215	75.2	15	53.6	63	64.9	307	70.7	χ^2=9.359 *p*=0.025 3*df*
	A	9	39.1	71	24.8	13	46.4	34	35.1	127	29.3	
The RN should discuss smoking cessation only if the patient mentions it (n=433)	D	5	21.7	180	62.7	16	57.1	53	55.8	254	58.7	χ^2=15.227 *p*=0.002 3*df*
	A	18	78.3	107	37.3	12	42.9	12	42.9	42	44.2	
The RN should only counsel patients about physical activity if linked with their presenting health problems (n=431)	D	13	56.5	206	72.5	18	64.3	56	58.3	293	68.0	χ^2=8.374 *p*=0.039 3*df*
	A	10	43.5	78	27.5	10	35.7	40	41.7	138	32.0	
The RN should discuss physical activity only if the patient mentions it (n=430)	D	6	27.3	167	59.0	18	64.3	50	51.5	241	56.0	χ^2=9.972 *p*=0.019 3*df*
	A	16	72.7	116	41.0	10	35.7	47	48.5	189	44.0	

D= disagree, A= Agree

- **Differences in patients' views of health promotion by RNs regarding CVD by personal health behaviour data**

This section reports the patients' views of health promotion by RNs relating to CVD based on the personal health behaviour data of the patients. There were statistically significant differences between the patients' views by their smoking status. As Table 7.5 shows, the patients who were smokers reported different views regarding health

promotion by RNs relating to CVD compared to those who never smoked or were past smokers. For example "the RN has sufficient knowledge to counsel patients to quit smoking and about the consequences of continued smoking" (p=0.007).

Table 7.5: Patients' views of health promotion by Registered Nurses regarding CVD and smoking status

Items		Never smoked		Smoked in the past		Current smoker		Total		*df*
		n	%	n	%	n	%	n	%	
Promoting smoking cessation is important in nursing practice (n=582)	D	12	3.7	5	5.1	16	10.0	33	5.7	χ^2=7.987 p=0.018 2*df*
	A	311	96.3	94	94.9	144	90.0	549	94.3	
The RN has sufficient knowledge to counsel patients to quit smoking and about the consequences of continued smoking (n=574)	D	33	10.4	22	22.7	25	15.7	80	13.9	χ^2=9.964 p=0.007 6*df*
	A	285	89.6	75	77.3	134	84.3	494	86.1	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

7.3 Health promotion by Registered Nurses regarding CVD by sample group

There were significant differences in views by sample group for 11 out of the 15 items (See Table 7.6). There was no consensus in the views regarding health promotion by RNs relating to CVD across the different sample groups as can be seen by the different views of the doctors and the patients compared to the RNs. As indicated in Table 7.6, the data suggested that more RNs, compared to the doctors and the patients, significantly reported positive views on health promotion by RNs regarding CVD (e.g. "the RN should only counsel patients about physical activity if linked with their presenting health problems", p<0.001).

Table 7.6: Health promotion by Registered Nurses regarding CVD by sample group

Items		RNs		Doctors		Patients		Total		*df*
		n	%	n	%	n	%	n	%	
Promoting smoking cessation is important in nursing practice (n=1721)	SD	3	0.4	3	0.7	15	2.5	21	1.2	χ^2=48.681 p<0.001 6*df*
	D	40	5.9	9	2.0	18	3.1	67	3.9	
	A	276	40.9	177	38.7	169	28.7	622	36.1	
	SA	356	52.7	268	58.6	387	65.7	1011	58.7	
The RN has sufficient knowledge to counsel patients to quit smoking and about the consequences of continued smoking (n=1706)	SD	3	0.4	9	2.0	9	1.5	21	1.2	χ^2=49.45 p<0.001 6*df*
	D	81	12.0	101	22.3	72	12.4	254	14.9	
	A	353	52.5	241	53.3	285	49.1	879	51.5	
	SA	236	35.1	101	22.3	215	37.0	552	32.4	
The RN should only counsel patients to quit smoking if linked with their presenting health problems (n=1712)	SD	108	16.0	90	19.7	104	17.8	302	17.6	χ^2=92.719 p<0.001 6*df*
	D	302	44.9	232	50.9	166	28.5	700	40.9	
	A	155	23.0	101	22.1	166	28.5	422	24.6	
	SA	108	16.0	33	7.2	147	25.2	288	16.8	
The RN should encourage as many patients as possible to quit smoking (n=1712)	SD	7	1.0	2	0.4	10	1.7	19	1.1	χ^2=36.859 p=0.004 6*df*
	D	36	5.3	21	4.6	32	5.5	89	5.2	
	A	329	48.9	207	45.4	194	33.3	730	42.6	
	SA	301	44.7	226	49.6	347	59.5	874	51.1	
The RN should discuss smoking cessation only if the patient mentions it (n=1708)	SD	59	8.8	44	9.7	52	9.0	155	9.1	χ^2=42.305 p<0.001 6*df*
	D	257	38.2	222	48.8	192	33.0	671	39.3	
	A	265	39.4	155	34.1	229	39.4	649	38.0	
	SA	91	13.5	34	7.5	108	18.6	233	13.6	
The RN has sufficient knowledge to counsel patients about physical activity (n=1706)	SD	5	0.7	14	3.1	12	2.1	31	1.8	χ^2=43.171 p<0.001 6*df*
	D	138	20.6	141	31.1	121	20.8	400	23.4	
	A	357	53.3	237	52.3	315	54.0	909	53.3	
	SA	170	25.4	61	13.5	135	23.2	366	21.5	
The RN should only counsel patients about physical activity if linked with their presenting health problems (n=1705)	SD	69	10.3	53	11.8	39	6.7	161	9.4	χ^2=103.671 p<0.001 6*df*
	D	340	50.5	252	55.9	186	32.0	778	45.6	
	A	185	27.5	115	25.5	251	43.2	551	32.3	
	SA	79	11.7	31	6.9	105	18.1	215	12.6	
The RN should discuss physical activity only if the patient mentions it (n=1701)	SD	31	4.6	39	8.6	40	6.9	110	6.5	χ^2=32.877 p<0.001 6*df*
	D	288	42.9	214	47.5	195	33.6	697	41.0	
	A	276	41.1	161	35.7	266	45.9	703	41.3	
	SA	76	11.3	37	8.2	79	13.6	192	11.3	
The RN has sufficient knowledge to counsel patients about weight management (n=1701)	SD	8	1.2	13	2.9	17	2.9	38	2.2	χ^2=59.955 p<0.001 6*df*
	D	143	21.4	161	35.6	106	18.3	410	24.1	
	A	369	55.2	223	49.3	332	57.2	924	54.3	
	SA	149	22.3	55	12.2	125	21.6	329	19.3	
The RN should only counsel patients about weight management if linked with their presenting health problems (n=1707)	SD	52	7.8	44	9.8	42	7.1	138	8.1	χ^2=102.656 p<0.001 6*df*
	D	331	49.5	249	55.3	179	30.4	759	44.5	
	A	218	32.6	121	26.9	241	41.0	580	34.0	
	SA	68	10.2	36	8.0	126	21.4	230	13.5	
The RN should discuss weight management only if the patient mentions it (n=1698)	SD	39	5.9	31	6.9	41	7.0	111	6.5	χ^2=38.115 p<0.001 6*df*
	D	294	44.1	229	51.1	198	33.9	721	42.5	
	A	261	39.2	161	35.9	271	46.4	693	40.8	
	SA	72	10.8	27	6.0	74	12.7	173	10.2	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

7.4 Health promotion by Registered Nurses regarding CVD by healthcare sector

There were significant differences across the different healthcare sectors for seven out of 15 items (See Table 7.7). There was no consensus of views across the healthcare sectors as can be seen by the different views of the participants recruited from the public sector, compared to the views of the participants recruited from the private sector and the RMS. As indicated in Table 7.7, the data suggested that a greater proportion of the participants recruited from the public sector reported positive views on health promotion by RNs regarding CVD compared to those recruited in the private sector and the RMS (e.g. "the RNs should only counsel patients to quit smoking if linked with their presenting health problems", χ^2=26.980, 6*df*, p<0.001).

Table 7.7: Health promotion by Registered Nurses regarding CVD by healthcare sector

Items		Public		Private		RMS		Total		*df*
		n	%	n	%	n	%	n	%	
The RN should only counsel patients to quit smoking if linked with their presenting health problems (n=1712)	SD	127	18.4	70	15.0	105	19.0	302	17.6	χ^2=26.980 p<0.001 6*df*
	D	310	44.8	169	36.3	221	39.9	700	40.9	
	A	136	19.7	152	32.6	134	24.2	422	24.6	
	SA	119	17.2	75	16.1	94	17.0	288	16.8	
The RN should encourage as many patients as possible to quit smoking (n=1712)	SD	8	1.2	3	0.6	8	1.4	19	1.1	χ^2=18.289 p=0.006 6*df*
	D	32	4.6	33	7.1	24	4.3	89	5.2	
	A	275	39.8	227	48.6	228	41.2	730	42.6	
	SA	376	54.4	204	43.7	294	53.1	874	51.1	
The RN should discuss smoking cessation only if the patient mentions it (n=1708)	SD	58	8.4	42	9.0	55	10.0	155	9.1	χ^2=16.107 p=0.013 6*df*
	D	302	43.7	155	33.2	214	38.9	671	39.3	
	A	241	34.9	193	41.3	215	39.1	649	38.0	
	SA	90	13.0	77	16.5	66	12.0	233	13.6	
The RN should encourage as many patients to increase their physical activity (n=1709)	D/SD	45	6.5	40	8.6	36	6.5	121	6.5	χ^2=11.233 p=0.024 4*df*
	A	344	49.8	262	56.5	309	55.8	915	53.5	
	SA	302	43.7	162	34.9	209	37.7	673	39.4	
The RN should discuss physical activity only if the patient mentions it (n=1702)	SD	51	7.4	26	5.6	33	6.0	110	6.5	χ^2=12.990 p=0.043 6*df*
	D	302	43.8	178	38.6	217	39.4	697	41.0	
	A	250	36.2	209	45.3	244	44.3	703	41.3	
	SA	87	12.6	48	10.4	57	10.3	192	11.3	
The RN should encourage as many patients to control their weight (n=1709)	D	50	7.2	49	10.6	49	8.8	148	8.7	χ^2=14.936 p=0.005 4*df*
	A	394	57.0	293	63.1	345	62.3	1032	60.4	
	SA	247	35.7	122	26.3	160	28.9	529	31.0	
The RN should discuss weight management only if the patient mentions it (n=1698)	SD	46	6.7	26	5.6	39	7.1	111	6.5	χ^2=13.100 p=0.041 6*df*
	D	317	46.3	173	37.5	231	41.8	721	42.5	
	A	251	36.6	209	45.3	233	42.2	693	40.8	
	SA	71	10.4	53	11.5	49	8.9	173	10.2	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

7.5 Health promotion by Registered Nurses regarding CVD by healthcare facility

There were significant differences across the healthcare facilities for five items out of the 15 items for health promotion by RNs regarding the CVD scale (See Table 7.8). There was no agreement regarding health promotion by RNs regarding CVD across the healthcare facilities as can be seen by the different views of the participants recruited from primary healthcare centres and the cardiac institute, compared to the views of the participants recruited from the general hospitals. The data suggested that a greater proportion of the participants recruited from primary healthcare centres and the cardiac institute agreed with health promotion by RNs regarding CVD compared to those recruited from the general hospitals (e.g. "the RN should only counsel patients to quit smoking if linked with their presenting health problems", χ^2=35.891, 6*df*, p<0.001). Additionally, a greater proportion of the participants recruited from the general hospitals agreed with health promotion by RNs regarding CVD compared to the participants recruited from the cardiac institute (e.g. "the RN should discuss physical activity only if the patient mentions it"; χ^2=32.833, 6*df*, p<0.001).

Table 7.8: Health promotion by Registered Nurses regarding CVD by healthcare facility

Items		General hospitals		Cardiac institute		Primary healthcare centres		Total		*df*
		n	%	n	%	n	%	n	%	
The RN should only counsel patients to quit smoking if linked with their presenting health problems (n=1712)	SD	235	18.3	26	13.8	41	17.2	302	17.6	χ^2=35.891
	D	478	37.2	89	47.3	133	55.6	700	40.9	*p*<0.001
	A	342	26.6	43	22.9	37	15.5	422	24.6	6*df*
	SA	230	17.9	30	16.0	28	11.7	288	16.8	
The RN should discuss smoking cessation only if the patient mentions it (n=1708)	SD	124	9.7	15	8.1	16	6.7	155	9.1	χ^2=28.311
	D	468	36.5	75	40.3	128	53.6	671	39.3	*p*<0.001
	A	501	39.0	78	41.9	70	29.3	649	38.0	6*df*
	SA	190	14.8	18	9.7	25	10.5	233	13.6	
The RN should only counsel patients about physical activity if linked with their presenting health problems (n=1705)	SD	123	9.6	11	5.9	27	11.3	161	9.4	
	D	561	43.9	90	48.1	127	53.1	778	45.6	χ^2=17.160
	A	417	32.6	66	35.3	68	28.5	551	32.3	*p*=0.009
	SA	178	13.9	20	10.7	17	7.1	215	12.6	6*df*
The RN should discuss physical activity only if the patient mentions it (n=1702)	SD	83	6.5	10	5.3	17	7.1	110	6.5	χ^2=32.833
	D	497	39.0	66	35.3	134	55.8	697	41.0	*p*<0.001
	A	545	42.7	93	49.7	65	27.1	703	41.3	6*df*
	SA	150	11.8	18	9.6	24	10.0	192	11.3	
The RN should discuss weight management only if the patient mentions it (n=1698)	SD	85	6.7	12	6.4	14	5.8	111	6.5	χ^2=24.815
	D	515	40.6	71	37.8	135	56.0	721	42.5	*p*<0.001
	A	529	41.7	90	47.9	74	30.7	693	40.8	6*df*
	SA	140	11.0	15	8.0	18	7.5	173	10.2	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

7.6 Health promotion by Registered Nurses regarding CVD by personal health behaviour data

There were significant differences on health promotion by RNs regarding CVD across the range of personal health behaviour data of the participants. The participants who perceived themselves as below normal body weight size had varied views about the item "the RN has sufficient knowledge to counsel patients about weight management" (χ^2=16.363, 6*df*, *p*=0.012) compared to those who perceived themselves as normal or above normal body weight size. The smokers were more likely to disagree with health promotion by RNs regarding CVD compared to the non-smoker participants and past smokers (e.g. "promoting smoking cessation is important in nursing practice", (χ^2=18.416, 6*df*, *p*=0.005).

There was no consensus regarding health promotion by RNs regarding CVD by perceived exercise barriers, however, the participants who perceived fewer barriers to

undertaking exercise were more likely to agree with health promotion by RNs regarding CVD compared to those who perceived more barriers to doing exercise, for instance, "the RN should only counsel patients to quit smoking if linked with their presenting health problems" (χ^2=40.185, 3*df*, p<0.001). The participants who were at the pre-contemplation stage relating to their personal physical exercise were more likely to disagree with health promotion by RNs regarding CVD compared to those who were at the action and maintenance stages (e.g. "the RN should only counsel patients about physical activity if linked with their presenting health problems", χ^2=45.557, 9*df*, p<0.001).

7.7 Health Promotion relating to CVD by Registered Nurses from the views of the Registered Nurses

This section presents the findings from the sample of the RNs on health promotion relating to CVD which included 15 items to measure the RNs' views regarding their role in health promotion relating to CVD.

Among the RNs sample (n=675), the mean score regarding health promotion relating to CVD by RNs was 43.91 (SD: 5.519; range: 22-60), indicating that most of the RNs reported positive views regarding health promotion by RNs in relation to CVD. There were no significant associations between the total score by healthcare sector, healthcare facility, age and perceived body weight size. However, the female RNs gave more positive ratings regarding health promotion by RNs relating to CVD compared to the male RNs (t=2.334, 668*df*, p=0.020). The RNs who possessed higher knowledge of CVD gave more positive ratings regarding health promotion by RNs relating to CVD compared to those who possessed lower levels of CVD knowledge (F=21.884, 2,672*df*, p<0.001).

The data suggested that there were differences across the range of personal health behaviour data on health promotion by RNs regarding CVD. The non-smokers gave more positive ratings regarding health promotion by RNs relating to CVD compared to the current smokers (F=4.109, 2,668df, p=0.017). The RNs who perceived fewer barriers to doing physical exercise gave more positive ratings regarding health promotion by RNs relating to CVD compared to those who perceived more barriers to undertaking physical exercise (t=5.111, 670df, p<0.001). Additionally, the RNs who were at the pre-contemplation stage gave less positive ratings regarding health promotion by RNs relating to CVD compared to those who were at the contemplation, action and the maintenance stages relating to physical exercise (F=9.068, 3,631df, p<0.001).

7.7.1 Registered Nurses' views of health promotion relating to CVD by healthcare sector

There were significant differences by healthcare sector for two out of the 15 items regarding health promotion by RNs regarding CVD scale. There was no consensus across the healthcare sectors regarding health promotion by RNs relating to CVD as can be seen by the different views of the RNs employed in the public sector, compared to the views of those employed in the private sector and the RMS. As shown in Table 7.9, a greater proportion of the RNs who were recruited from the public sector and the RMS agreed with the two items compared to those employed in the private sector (e.g. "the RN should only counsel patients to quit smoking if linked with their presenting health problems", χ^2=16.742, 6df, p=0.010).

Table 7.9: Health promotion by Registered Nurses regarding CVD and healthcare sector

Items		Public		Private		RMS		Total		*df*
		n	%	n	%	n	%	n	%	
The RN should only counsel patients to quit smoking if linked with their presenting health problems (n=673)	SD	39	15.4	37	20.1	32	13.6	108	16.0	χ^2=16.742
	D	130	51.4	63	34.2	109	46.2	302	44.9	*p*=0.010
	A	44	17.4	50	27.2	61	25.8	155	23.0	6*df*
	SA	40	15.8	34	18.5	34	14.4	108	16.0	
The RN should discuss smoking cessation only if the patient mentions it (n=672)	SD	20	7.9	22	12.0	17	7.2	59	8.8	χ^2=14.482
	D	114	44.9	56	30.6	87	37.0	257	38.2	*p*=0.025
	A	91	35.8	72	39.3	102	43.4	265	39.4	6*df*
	SA	29	11.4	33	18.0	29	12.3	91	13.5	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

7.7.2 Registered Nurses' views of health promotion regarding CVD and healthcare facility

There were significant differences by healthcare facility for five out of the 15 items regarding health promotion by RNs regarding the CVD scale (See Table 7.10). There was no consensus across the healthcare facilities as can be seen by the different views of the RNs employed in primary healthcare centres, compared to the views of the RNs recruited in the general hospitals and the cardiac institute. A greater proportion of the RNs recruited in the primary healthcare centres agreed with health promotion by RNs compared to those recruited from the general hospitals and the cardiac institute (e.g. "the RN should discuss physical activity only if the patient mentions it", χ^2=38.540, 6*df*, *p*<0.001).

Table 7.10: Health promotion by Registered Nurses relating to CVD and healthcare facility

Items		General hospitals		Cardiac institute		Primary healthcare centres		Total		*df*
		n	%	n	%	n	%	n	%	
The RN should only counsel patients to quit smoking if linked with their presenting health problems (n=673)	SD	86	17.4	11	11.8	11	12.9	108	16.0	χ^2=15.356 p=0.018 6*df*
	D	205	41.4	44	47.3	53	62.4	302	44.9	
	A	118	23.8	25	26.9	12	14.1	155	23.0	
	SA	86	17.4	13	14.0	9	10.6	108	16.0	
The RN should discuss smoking cessation only if the patient mentions it (n=672)	SD	48	9.7	5	5.4	6	7.1	59	8.8	χ^2=34.514 p<0.001 6*df*
	D	170	34.3	32	34.8	55	64.7	257	38.2	
	A	201	40.6	46	50.0	18	21.2	265	39.4	
	SA	76	15.4	9	9.8	6	7.1	91	13.5	
The RN should discuss physical activity only if the patient mentions it (n=671)	SD	23	4.7	3	3.2	5	5.9	31	4.6	χ^2=38.540 p<0.001 6*df*
	D	202	41.0	28	30.1	58	68.2	288	42.9	
	A	204	41.4	55	59.1	17	20.0	276	41.1	
	SA	64	13.0	7	7.5	5	5.9	76	11.3	
The RN has sufficient knowledge to counsel patients about weight management (n=669)	SD	7	1.4	0	0.0	1	1.2	8	1.2	χ^2=15.852 p=0.015 6*df*
	D	100	20.3	23	25.0	20	23.8	143	21.4	
	A	259	52.5	60	65.2	50	59.5	369	55.2	
	SA	127	25.8	9	9.8	13	15.5	149	22.3	
The RN should discuss weight management only if the patient mentions it (n=666)	SD	32	6.6	4	4.3	3	3.5	39	5.9	χ^2=17.306 p=0.008 6*df*
	D	206	42.2	36	38.7	52	61.2	294	44.1	
	A	189	38.7	45	48.4	27	31.8	261	39.2	
	SA	61	12.5	8	8.6	3	3.5	72	10.8	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

7.7.3 Registered Nurses' views of health promotion relating to CVD by their knowledge of CVD items

There were significant differences by the RNs' levels of CVD knowledge for 12 out of the 15 items for health promotion by RNs regarding the CVD scale (See Table 7.11). There was no consensus by the levels of CVD knowledge as can be seen by the different views of the RNs who had less CVD knowledge compared to those who had adequate and high levels of CVD knowledge. A greater proportion of the RNs who had less CVD knowledge disagreed with health promotion by RNs regarding CVD compared to those who had adequate and high levels of CVD knowledge (e.g. "the RN should encourage as many patients as possible to quit smoking", χ^2=38.768, 2*df*, p<0.001).

Table 7.11: Registered Nurses' views of health promotion regarding CVD and CVD knowledge items

Items		Less knowledge		Adequate knowledge		High knowledge		Total		*df*
		n	%	n	%	n	%	n	%	
The RN has sufficient knowledge to counsel patients to quit smoking and about the consequences of continued smoking (n=673)	SD/D	10	28.6	47	14.5	27	8.6	84	12.5	χ^2=13.720 p=0.001 2*df*
	A/SA	25	71.4	278	85.5	286	91.4	589	87.5	
The RN should only counsel patients to quit smoking if linked with their presenting health problems (n=673)	SD	1	2.9	39	12.1	68	21.6	108	16.0	χ^2=26.171 p<0.001 6*df*
	D	15	42.9	141	43.7	146	46.3	302	44.9	
	A	15	42.9	82	25.4	58	18.4	155	23.0	
	SA	4	11.4	61	18.9	43	13.7	108	16.0	
The RN should encourage as many patients as possible to quit smoking (n=673)	SD/D	11	31.4	17	5.3	15	4.8	43	6.4	χ^2=38.768 p<0.001 2*df*
	A/SA	24	68.6	306	94.7	300	95.2	630	93.6	
The RN should discuss smoking cessation only if the patient mentions it (n=672)	SD	2	5.7	21	6.5	36	11.5	59	8.8	χ^2=18.858 p=0.004 6*df*
	D	9	25.7	111	34.3	137	43.8	257	38.2	
	A	17	48.6	141	43.5	107	34.2	265	39.4	
	SA	7	20.0	51	15.7	33	10.5	91	13.5	
Promoting physical activity is important in nursing practice (n=672)	SD/D	13	38.2	24	7.4	21	6.7	58	8.6	χ^2=39.904 p<0.001 2*df*
	A/SA	21	61.8	300	92.6	293	93.3	614	91.4	
The RN should only counsel patients about physical activity if linked with their presenting health problems (n=673)	SD	3	8.6	24	7.4	42	13.3	69	10.3	χ^2=25.729 p<0.001 6*df*
	D	8	22.9	161	49.8	171	54.3	340	50.5	
	A	16	45.7	93	28.8	76	24.1	185	27.5	
	SA	8	22.9	45	13.9	26	8.3	79	11.7	
The RN should encourage as many patients to increase their physical activity (n=672)	SD/D	8	22.9	13	4.0	16	5.1	37	5.5	χ^2=21.698 p<0.001 2*df*
	A/SA	27	77.1	309	96.0	299	94.9	635	94.5	
The RN should discuss physical activity only if the patient mentions it (n=671)	SD	1	2.9	10	3.1	20	6.4	31	4.6	χ^2=27.009 p<0.001 6*df*
	D	9	25.7	125	38.8	154	49.0	288	42.9	
	A	24	68.6	139	43.2	113	36.0	276	41.1	
	SA	1	2.9	48	14.9	27	8.6	76	11.3	
Promoting weight management is important in nursing practice (n=663)	SD/D	11	32.4	28	8.8	28	9.0	67	10.1	χ^2=19.532 p<0.001 2*df*
	A/SA	23	67.6	290	91.2	283	91.0	596	89.9	
The RN should only counsel patients about weight management if linked with their presenting health problems (n=669)	SD	2	5.7	20	6.2	30	9.6	52	7.8	χ^2=24.862 p<0.001 6*df*
	D	12	34.3	139	43.3	180	57.5	331	49.5	
	A	16	45.7	122	38.0	80	25.6	218	32.6	
	SA	5	14.3	40	12.5	23	7.3	68	10.2	
The RN should encourage as many patients to control their weight (n=671)	SD/D	10	28.6	28	8.7	27	8.6	65	9.7	χ^2=15.054 p=0.001 2*df*
	A/SA	25	71.4	294	91.3	287	91.4	606	90.3	
The RN should discuss weight management only if the patient mentions it (n=666)	SD	1	2.9	10	3.1	28	9.0	39	5.9	χ^2=34.201 p<0.001 6*df*
	D	5	14.7	135	42.1	154	49.5	294	44.1	
	A	24	70.6	134	41.7	103	33.1	261	39.2	
	SA	4	11.8	42	13.1	26	8.4	72	10.8	

SD=strongly disagree, D= disagree, A= Agree, SA= strongly agree

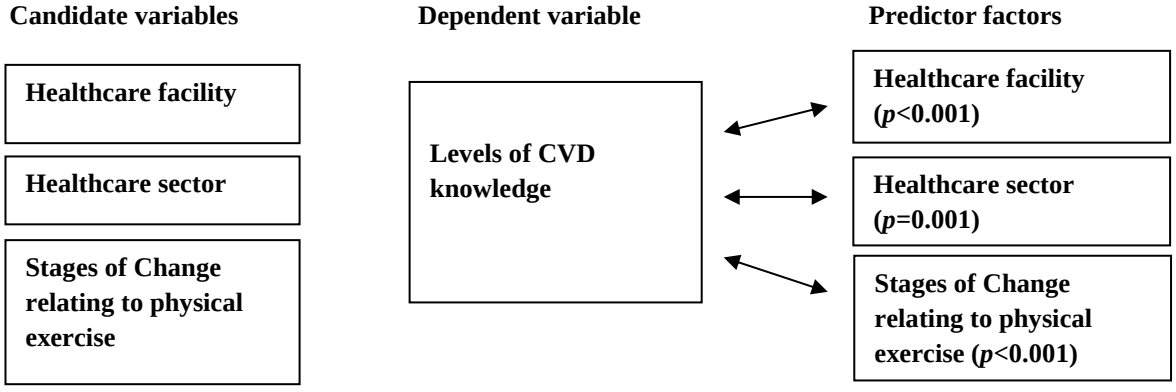
7.8 Statistical Modelling from the perspective of the Registered Nurses

Statistical modelling from the perspective of the RNs was used to examine the study outcome measures and categorical factors in order to develop an explanatory model of the RNs' role in health promotion related to CVD in Jordan. The first model is related to the levels of CVD knowledge, followed by the RNs' views of responsibilities for health promotion model, then the RNs' perceptions of health promotion model and the RNs' perceived constraints to health promotion model. Explanatory models in general health promotion by RNs and relating to CVD were developed.

7.8.1 Registered Nurses' knowledge of CVD model

In this model (See Figure 7.1), three categorical variables (i.e. healthcare facility, healthcare sector and Stages of Change relating to physical exercise levels) were examined in order to test their interaction with the levels of CVD knowledge. These variables were included because findings from the bivariate analysis indicated a significant relationship with the levels of CVD. The model showed that healthcare facility (p<0.001), healthcare sector (p=0.001) and the Stages of Change relating to physical exercise (p<0.001) were statistically significant predictor factors for the levels of the RNs' knowledge of CVD (R Squared= 0.070).

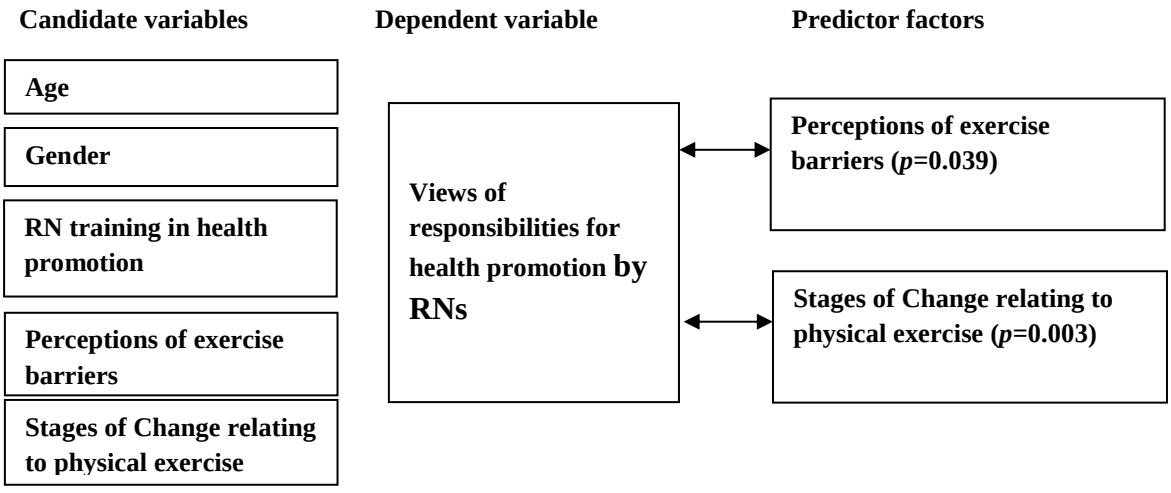
Figure 7.1: Registered Nurses' knowledge of CVD model



7.8.2 Registered Nurses' views of responsibilities for health promotion model

This model (See Figure 7.2) included five categorical variables (i.e. age, gender, RN training in health promotion, perceptions of exercise barriers and Stages of Change relating to physical exercise) to test their interaction with the RNs' views of responsibilities for health promotion by RNs. The five variables were included in the model because a significant relationship with the views of responsibilities for health promotion sub-scale emerged in the bivariate analysis. The model indicated that two variables were statistically significant predictor factors for the RNs' views of responsibilities for health promotion by RNs (R Squared= 0.031), namely, perceptions of exercise barriers (p=0.039); and Stages of Change relating to physical exercise (p=0.003).

Figure 7.2: Registered Nurses' views of responsibilities for health promotion model

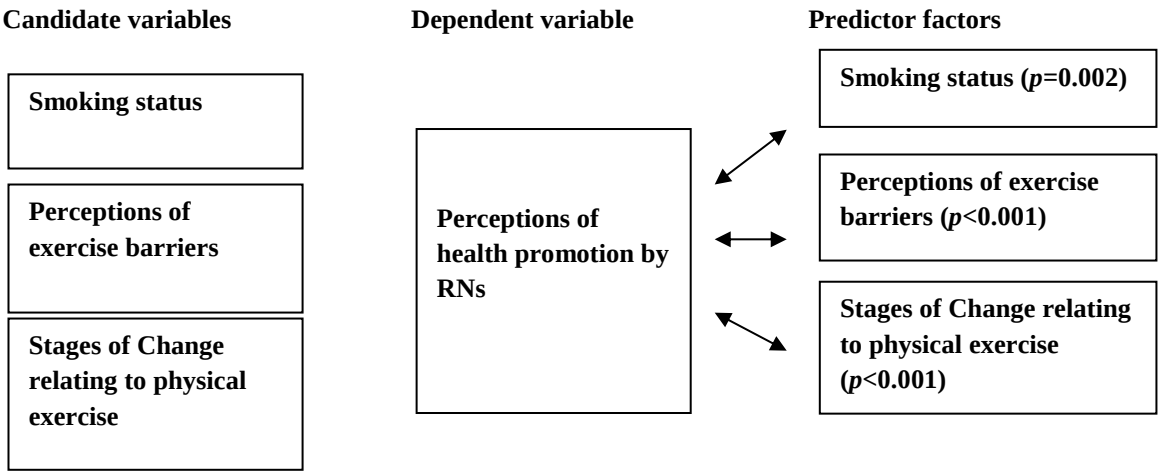


7.8.3 Registered Nurses' perceptions of health promotion model

As shown in Figure 7.3, in this model, three categorical variables including smoking status, perceptions of exercise barriers and Stages of Change relating to physical exercise were examined in order to test their interaction with the perceptions of health

promotion by RNs. The three categorical variables were included because a significant relationship with the perceptions of health promotion by RNs was indicated in the bivariate analysis. The model indicated that smoking status (p=0.002), perceptions of exercise barriers (p<0.001) and Stages of Change relating to physical exercise (p<0.001) were statistically significant predictors of the perceptions of health promotion by RNs (R Squared= 0.125).

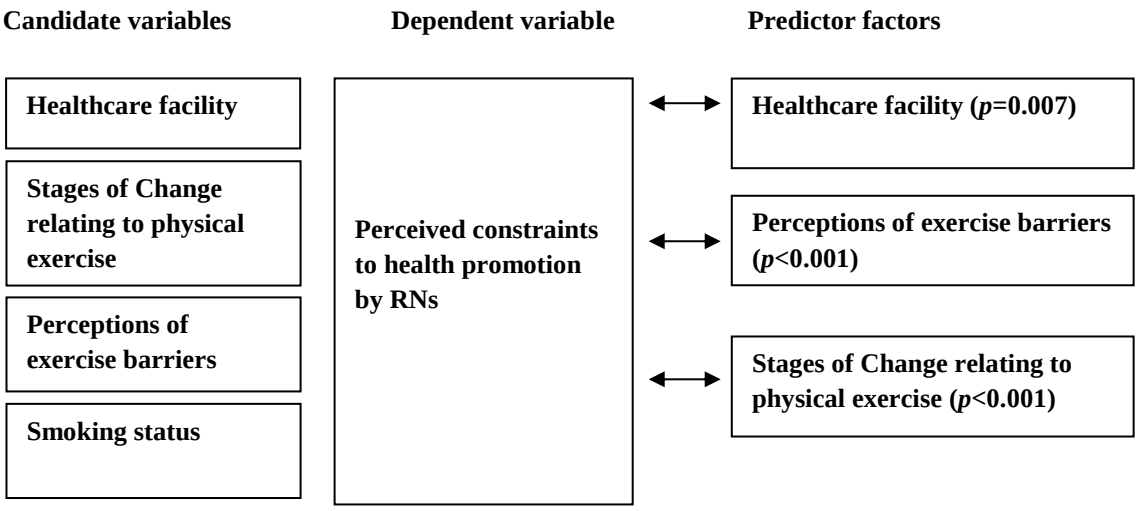
Figure 7.3: Registered Nurses' perceptions of health promotion by RNs model



7.8.4 Registered Nurses' perception of constraints to health promotion model

In this model, four categorical variables including healthcare facility, smoking status, perceptions of exercise barriers and Stages of Change relating to physical exercise levels were examined in order to test their interaction with the RNs perceived constraints to health promotion by RNs. These categorical variables were included because the bivariate analysis indicated a significant relationship with the perceived constraints to health promotion by RNs. The model showed (See Figure 7.4) that healthcare facility (p=0.007), perceptions of exercise barriers (p<0.001) and Stages of Change relating to physical exercise (p<0.001) were statistically significant predictor factors for the perceived constraints to health promotion by RNs (R Squared= 0.080).

Figure 7.4: Registered Nurses' perceived constraints to health promotion model

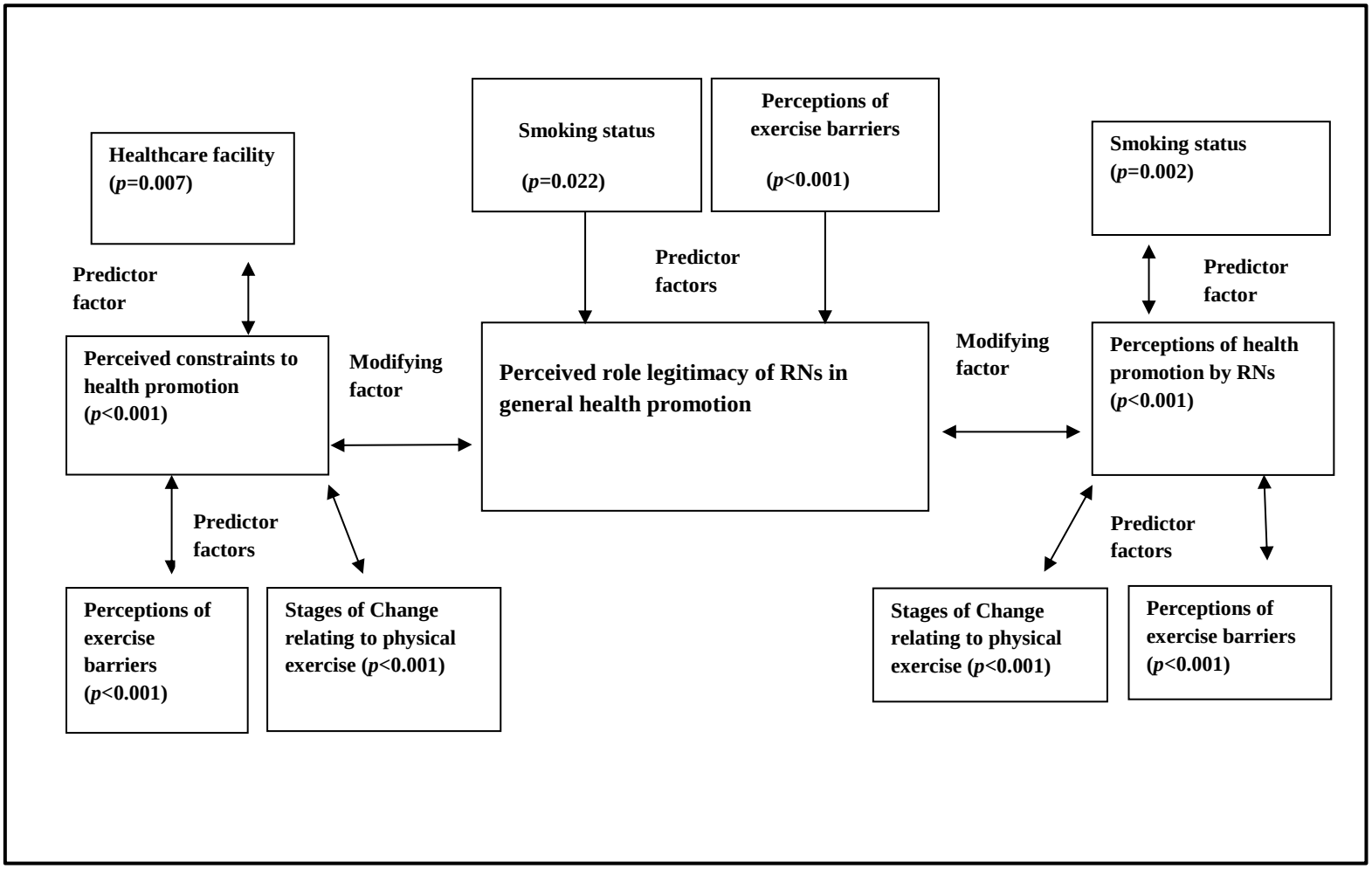


7.8.5 An explanatory model of Registered Nurses' views of role legitimacy in general health promotion

Independent variables that had statistically significant bivariate associations with general health promotion (i.e. Stages of Change relating to physical exercise, perceptions of exercise barriers and smoking status) were examined in relation to other modifying factors (i.e. views of responsibilities for health promotion, perceptions of health promotion and perceived constraints to health promotion) were included in the model. These modifying factors were included in the model to test their association with health promotion along with the Stages of Change relating to physical exercise, perceptions of exercise barriers and smoking status. The model shown in Figure 7.5 identified that there was a strong association between health promotion and the following two independent variables: perceptions of exercise barriers (those who perceived less exercise barriers gave more positive scores than those who perceived more exercise barriers [Estimated Marginal Mean (EMM)=24.692, Std. Error=0.220 vs 23.818, Std. Error=0.187, $p<0.001$]) and smoking status (those who reported had never smoked [EMM=24.530, Std. Error=0.162] and past smokers [EMM=24.469, Std.

Error=0.375] gave more positive scores than current smokers [EMM=23.766, Std. Error=0.232]) (F(2,671)=3.847 p=0.022). The model (See Figure 7.5) also identified a positive association between the health promotion by RNs with the following modifying factors: perceived constraints to health promotion (B=0.653, Std. Error=0.059, t=6.094, p<0.001); and perceptions of health promotion by RNs (B=0.614, Std. Error=0.058, t=6.094, p<0.001) (R Squared= 0.362).

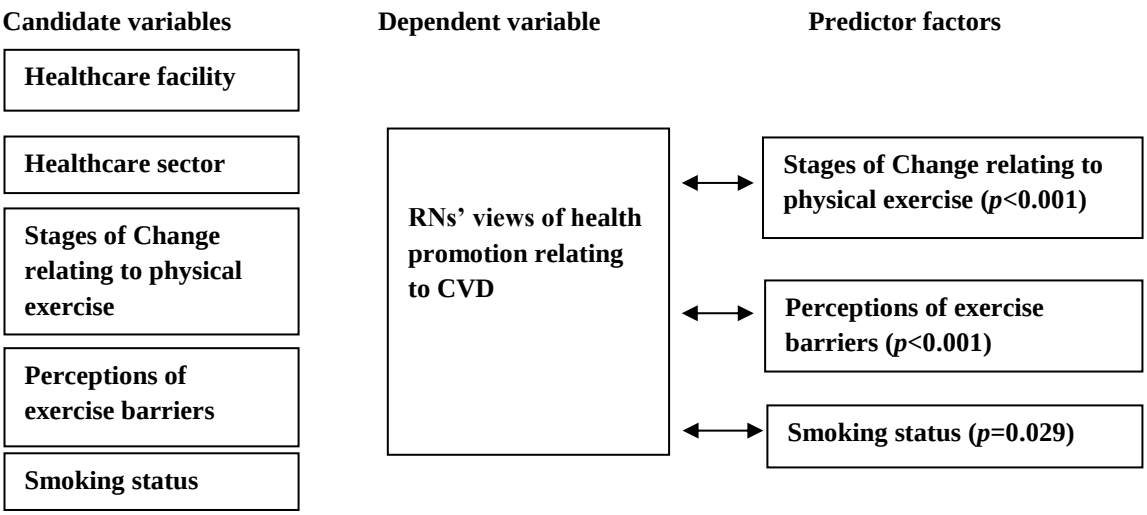
Figure 7.5: An explanatory model of Registered Nurses' views of their role legitimacy in general health promotion



7.8.6 Registered Nurses' perceptions of health promotion relating to CVD model

As indicated in Figure 7.6, five categorical variables including healthcare facility, healthcare sector, Stages of Change relating to physical exercise levels, perceptions of exercise barriers and smoking status were examined in this model in order to test their interaction with health promotion regarding CVD by RNs. The five variables were included in the model because bivariate analysis revealed a significant relationship with health promotion regarding CVD by RNs. The model indicated that the Stages of Change relating to physical exercise (p<0.001), perceptions of exercise barriers (p<0.001) and smoking status (p=0.029) were statistically significant predictor factors for health promotion regarding CVD by RNs (R Squared=0.084).

Figure 7.6: Registered Nurses' views of health promotion relating to CVD model

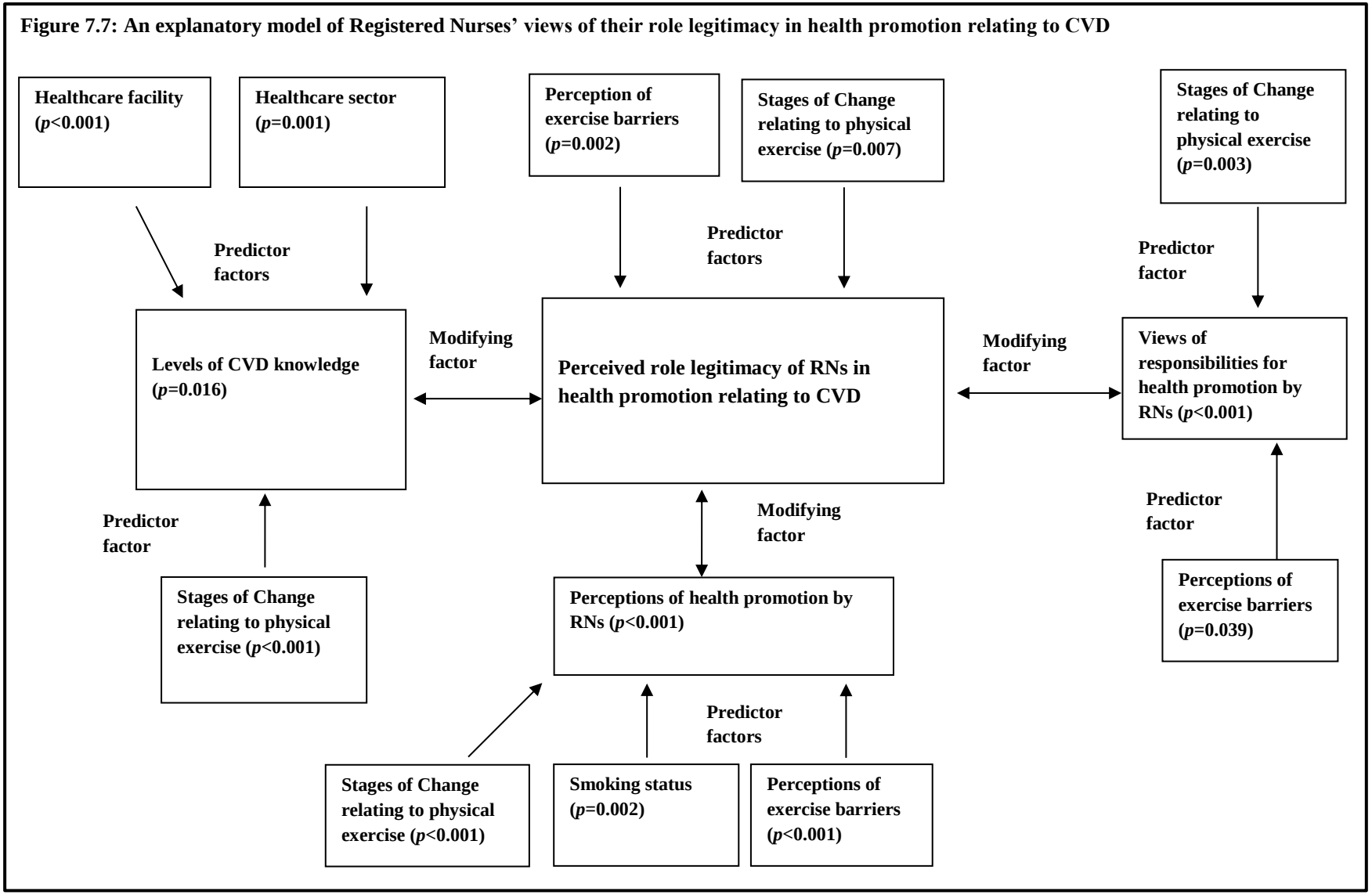


7.8.7 An explanatory model of Registered Nurses' views of role legitimacy in health promotion relating to CVD

Independent variables that had statistically significant bivariate associations for health promotion regarding CVD (i.e. Stages of Change relating to physical exercise, perceptions of exercise barriers and smoking status) were finally examined in relation to

other modifying factors (i.e. level of CVD knowledge, views of responsibilities for health promotion, perceptions of health promotion and perceived constraints to health promotion) were included in the model. These modifying factors were included in the explanatory model to test their associations with the views of RNs on health promotion regarding CVD along with the three healthcare predictors. The model (See Figure 7.7) identified a strong association between the health promotion regarding CVD and the following two independent variables: perceptions of exercise barriers (those who perceived less exercise barriers gave more positive scores than those who perceived more exercise barriers [EMM=44.284, Std. Error=0.395 vs 43.037, Std. Error=0.332, p=0.002]) and Stages of Change relating to physical exercise (those who were at the pre-contemplation stage [EMM=42.442, Std. Error=0.872] gave less positive scores than those who were at the action [EMM=43.877, Std. Error=0.673] and maintenance stages [EMM=43.887, Std. Error=0.410]) (F(3,635)= 4.629, p=0.007). The model (See Figure 7.7) identified a positive association between the health promotion regarding CVD with the following modifying factors: views of responsibilities for health promotion (B=0.507, Std. Error=0.098, t=5.186, p<0.001) perceptions of health promotion (B=0.338, Std. Error=0.055, t=6.094, p<0.001); and the levels of CVD knowledge (B=0.366, Std. Error=0.101, t=3.636, p=0.016) (R Squared= 0.250).

Figure 7.7: An explanatory model of Registered Nurses' views of their role legitimacy in health promotion relating to CVD



Chapter Eight

Discussion

8.1 Introduction

This chapter discusses the study findings with reference to the study objectives and existing literature. It begins with providing a summary of the participants' characteristics in the context of the healthcare system and population of Jordan. The personal health behaviour data of each sample group are discussed separately. The second section of this chapter discusses the role legitimacy of the RNs in general health promotion and then in relation to CVD from the perspective of RNs, doctors and patients in Jordan. The final section discusses the proposed explanatory model of the role of the RNs in health promotion regarding CVD in Jordan.

8.2 Sample and data set

The study sample (n=1726) comprised RNs (n=676), doctors (n=458) and patients (n=592), with an overall response rate of 72%. The data collection was undertaken in the capital city, Amman, across a selection of hospitals and primary healthcare centres, to provide a good representation of the national population as most healthcare institutions are located there (MoH, 2013c; MoH, 2013d). Additionally, the accessed hospitals were representative of all the main healthcare sectors, i.e. public, RMS and private, that are available to Jordanian patients. However, the proportion of participants recruited from the public sector (40.3%) was higher than that from the RMS (32.3%) and the private sector (27.3%). The selection of private hospitals (n=6) and primary healthcare centres (n=19) was undertaken randomly using a computer, and reflected the total population at the organisational level.

The majority of the RNs, the doctors and the patients were Jordanian (92%) and male (58%) which is slightly higher than the current national gender balance, with the latest figures indicating that the proportion of males and females in Jordan are similar, namely 51.5% and 48.5%, respectively (Department of Statistics, 2013a). Just under half (47%) of the study participants were under 30 years with a quarter aged between 30 and 39 years and 29% aged 40 years and over. This age structure is representative of the population of Jordan. According to the WHO (2013c), the median age of the Jordanian population is 21 years with the majority (56%) aged 15-60 years and only 6% of the population being aged over 60 years.

8.2.1 Registered Nurse participants

Most of the RN participants were Jordanian (97.5%) and female (53.1%), reflecting the profile of RNs in the country which is predominantly a female profession (Ahmad and Alasad 2007; Shuriquie et al., 2008). Nursing has only recently become popular among males in Jordan. It is, therefore, not surprising that the male RNs (79.6%) in the current study were relatively younger (20-29 years) than the female RNs (64.3%). The Jordan Nursing Council indicated that a high number of male students (65%) were enrolled on the BSN programme in 2005 (Ahmad and Alasad, 2007).

Interestingly, Shuriquie's (2006) study revealed that more than half of their sample of nurses (52%) reported that nursing was not their first choice of career in Jordan. The potential explanations for the emergence of male RNs may rest with the unemployment rate in Jordan, with the nursing profession being considered a secure form of employment, in particular for males. In Jordan, the unemployment rate reached 12.2% in 2012 with the highest rate among females (19.9%) compared to males (10.4%) (Department of Statistics, 2013b). The majority (71.5%) of the RN participants were

under 30 years old. Those aged 40 years and over were more likely to be female and working in the primary healthcare centres. The current study included adequate representation of RNs from each healthcare sector with more RN participants being recruited from the public sector (37.6%) and the RMS (35.2%) compared to the private sector (27.2%). However, most of the nurses in Jordan are employed in the private sector (Ministry of Health, 2013c) where their terms and conditions of employment are better (Mrayyan, 2005; Shuriquie, 2008).

The majority of the RNs held a BSN degree (96.7%) with 3.3% having either a MSc or PhD degree. Although the universities in Jordan began providing postgraduate education in nursing in 1984 (Shuriquie et al., 2007), only a small number of the RNs (3.3%) in the present study had higher level qualifications (i.e. MSc or PhD). This could be due to the high number of nurses with these qualifications leaving the country to work elsewhere (e.g. Gulf countries) in order to obtain better employment prospects (Al-Ma'aitah et al., 1999), given that the salaries in Jordan are relatively low. Furthermore, some nurses with higher qualifications choose an academic career path by opting to work in the university sector. The majority of the RNs worked in surgical (30.6%), medical (28.3%) or medical-surgical (25.0%) wards with fewer working in the primary healthcare centres (13.2%). The RNs were recruited from different settings to achieve appropriate representation, namely, acute care settings (i.e. medical and surgical wards), out-patients and primary healthcare centres. However, only a small number of the RNs were recruited from outpatient clinics (3.0%).

With regard to the personal health behaviour data of the RN participants, approximately 30% were active smokers, whilst 10.9% were past smokers. These findings are similar to those of other studies (Merrill et al., 2008; Shishani et al., 2011) conducted in Jordan.

Merrill et al. (2008) reported that 30% of their sample of nurses were active smokers with 7% having smoked in the past and 63% had never smoked. Similarly, Shishani et al.'s (2011) study reported that 36% of their sample nurses were active smokers with 9.8% having smoked in the past and 54.1% had never smoked. In both the current study and in Shishani et al.'s (2011) study, the male nurses were more likely to be smokers compared to the female nurses. Interestingly, 48.4% of the nurses in Shishani et al.'s (2011) study reported not wanting to quit smoking with more female nurses (62%) desiring to quit smoking compared to the male nurses (52%). The findings from the current study revealed that more RNs employed in the private sector (18.1%) had received training in smoking cessation compared to the other healthcare sectors. This contrasts with Merrill et al.'s (2008) study which reported that 41% of their nurses employed in the public and private sectors had received training to counsel patients on smoking cessation. The possible explanation for this difference could be due to Merrill et al.'s (2008) sample having more clinical experience. In addition, their data were collected in 2006.

The majority of the RN participants (70%) in the current study did not undertake physical exercise, but over half (65.4%) responded that they intended to undertake physical exercise in the next six months. Reported barriers to undertaking exercise included the lack of convenient opening times for exercise facilities (73.3%), being too far away (68.0%) and that exercise was tiring (49.8%). There is limited research on exercise in Jordan, especially among RNs. A study conducted in Saudi Arabia (Aldossary, 2010) reported that 57.6% of the study nurses did not undertake physical exercise and the majority (75.1%) of those who engaged in regular exercise were exercising 1-3 times per week.

More RNs who were employed in the general hospitals (30.9%) had received training in exercise promotion compared to those who worked in the cardiac institute (23.3%) and the primary healthcare centres (17.9%). Notably, the findings suggested that the majority of the RN participants (53.3%) reported below normal body weight, with 23.6% being classified as overweight body size. The latter is similar to Aldossary's (2010) study which was conducted in Saudi Arabia and revealed that one-fifth (20.4%) of the study nurses reported being overweight or obese. Furthermore, the current study revealed that the RNs employed in the public sector (21.6%) and the RMS (23.3%) had received more health promotion training in weight management compared to those employed in the private sector (8.7%). The RMS regularly offers short education courses (1-10 days) on such matters as infection prevention and patient education (Shuriquie et al., 2007), whilst the private hospitals provide different types of training courses depending on the needs of the employees which vary from hospital to hospital (Shuriquie et al., 2008).

8.2.2 Doctor participants

The majority of the doctors participating in the study were male (76.2%) and Jordanian (89.6%), with the majority (69.8%) aged below 39 years, whilst 30.2% were aged 40 years and over. The number of the doctors recruited from the private sector (27.1%) and the RMS (26.2%) was lower than those recruited from the public sector (46.7%). The sample recruited doctors with different clinical levels (49.2% resident doctors; specialists 21.8%; consultants 9.1%; GPs 14.5%; registrars 5.3%), representing a good spread across the profession. The private hospitals employed the majority of the younger doctors (below than 29 years). Across the different healthcare facilities, the majority of the doctors (76.0%) were recruited from the general hospitals, with 18.3%

from the primary healthcare centres and 5.7% from the cardiac institute. The recruitment of the doctor participants from the cardiac institute in the current study was a challenge for two reasons: first, the number of employed doctors was relatively low within the cardiac institute and, second, they reported that they were very busy and not able to participate in the study. However, the low representation from the cardiac institute was still sufficient to permit bivariate analysis. It is not, perhaps, surprising that the response rate for the doctor participants was low (57.7%) compared to the RN participants (85.3%). A low-response rate among the doctor participants in Jordan has been reported previously, for example, in Shuriquie's (2006) study the response rate for the doctors (62%) was lower than for the nurses (77%). Over a third of the doctors (38%) were registered with the Jordan Medical Council between the years 2000 and 2009, whilst 30% registered between the years 2010 and 2012 and 31% registered prior to 2000, with more than half (58.1%) obtaining their medical certificate from abroad. The number of the doctors who obtained their medical certificate from abroad was high, which could be related to high competition among Jordanian students to study medicine. Students need a minimum grade average of 85% in high school to study medicine in Jordan, for example, the University of Jordan requires a minimum of 85% (University of Jordan, 2013).

With regards to the personal health behaviour data of the doctor participants, 29% reported that they were active smokers while 15% were past smokers. This finding is slightly different from the findings of Shishani et al. (2011) who reported that 46.9% of their study doctors were active smokers with 12.4% having smoked in the past and 40.7% had never smoked. However, Shishani et al.'s (2011) study reported that the smoking percentage for the male doctors (94.6%) was higher than the female doctors (5.4%) which are similar to the current study. Notably, Shishani et al. (2011) collected

their data in 2007 in general hospitals within two healthcare sectors (i.e. public and private sectors). Another study by Merrill et al. (2008) measured the smoking behaviour of doctors and nurses in Jordan which reported similar findings. Namely, 19% of the doctors were active smokers with 17% having smoked in the past and 64% never smoked. Seventy-two percent of the doctors in the current study reported not undertaking any regular exercise activity and 5.3% expressed no intention of doing so in the near future, whilst 66% of those not currently undertaking physical exercise reporting that they were keen to undertake exercise in the coming six months. This contrasts to the findings of Aldossary's (2010) survey which reported that 46.8% of the doctors did not undertake regular exercise. The commonly stated barriers to exercise in the current study were the lack of convenient opening times of exercise facilities (61.6%), being too far away (60.9%) and that exercise tired them (49.8%). The majority of the doctor participants (40.1%) reported that they were overweight, whilst 33.3% reported being underweight. This is similar to Aldossary's (2010) study which reported that 46.4% of the doctors were obese or overweight.

8.2.3 Patient participants

The patient participants were mainly Jordanian (87.3%) and the males (57.4%) outnumbered the females (42.6%). They were spread across different age groups, i.e. 20 to 39 years (48.9%), 40 to 49 years (26.7%) and 50 years and over (24.4%), providing adequate representation of the Jordanian population. Moreover, representative numbers of patients were successfully recruited from each sector (i.e. public sector, 38.7%; the RMS, 33.8%; private sector, 38.7%). The non-Jordanian patients were more likely to have been recruited from the private sector compared to the other healthcare sectors. Generally, the private sector attracted patients from neighbouring countries (WHO,

2009). The highest proportion of the patients (41.9%) were educated to at least college/university level, with 36.6% having completed high school and 12.2% having reached middle school. The majority were married (73.5%), while the highest proportion of the patients (48.9%) was aged 20-39 years. The majority of the sample (62.2%) was unemployed. This contrasts to the latest report by the Department of Statistics (2013b) which reported that the highest (48.8%) unemployment rate in 2012 was among the young age group (15-24 years) and 7.8% among those aged 25 years and over. The potential explanation for the high unemployment rate in the patient sample could be due to their health conditions with 32%, for example, being diagnosed with heart disease. More than half (62.3%) of the patient sample did not know the difference between RNs and practical nurses, but those with higher qualifications were more likely to be able to differentiate between the two levels of nurses. Just under a third (32%) of the patient participants reported having heart disease. It emerged that patients with heart disease were more likely to be illiterate, male, aged 40 years and over, unemployed and admitted to the public sector or the RMS. This is in line with the latest screening conducted by the Department of Statistics in Jordan (2011) which surveyed 13,000 families across all cities in Jordan and revealed, that increased blood pressure and diabetes mellitus were the most common chronic diseases, with a prevalence rate of 39% and 29%, respectively, in the total population. In addition, illiterate and male citizens were more likely to have chronic diseases (e.g. CVD). The survey also revealed that the incidence of such diseases, in particular heart disease, increased with age (30 years and over) (Department of Statistics, 2011).

The personal health behaviour data of the patients revealed, that 27% were active smokers with 17% having smoked in the past, while 55.6% had never smoked which is similar to previous studies conducted in Jordan (Naddaf 2007; Al-Nsour et al., 2012;

Mukattash et al., 2012). Naddaf's (2007) study aimed to determine the age at which students start to smoke cigarettes and explored the environmental factors and social influences that motivate Jordanian students to smoke. The study revealed that 33% of the students reported being active smokers (26.5% male and 6.5% female). Moreover, two thirds of the active smokers started to smoke before the age of 18 years with 23% beginning between the ages of 18-21 years. The students reported their motivations for smoking as trying something new (79%), others smoked around them (28%) and because smoking was forbidden (27%). However, the majority of Naddaf's (2007) sample (87%) expressed a positive desire to stop smoking by avoiding friends who smoked (96%).

Similarly, Al-Nsour et al.'s (2012) study recruited a large sample of adults aged 18 years and older (n=3654) to measure the prevalence of non-communicable disease risk factors in Jordan. The study revealed that nearly one-third of the participants reported being active smokers. Likewise, Mukattash et al. (2012) recruited a general public sample (n=1000) with the majority (87%) having at least secondary level education. A third (33.4%) of the participants reported being smokers. The WHO (2013b) reported that 29% of the Jordanian population were active smokers in 2012. In addition, active smokers were more likely to be male compared to females.

The Department of Statistics in Jordan (2011) surveyed the smoking rate across 13,000 families around different cities in Jordan in 2010 and found that 61% of families had at least one active smoker with the majority (96%) smoking tobacco. Notably, 96% of the families who had at least one active smoker in the family reported smoking inside the house and 72% had not heard of the term "Passive Smoking", reflecting the high rate of smoking in Jordan as well as a lack of awareness about its detrimental health effects.

Abu-Baker et al. (2010) conducted a survey to compare the frequency of cigarette smoking before and after diagnosis of CHD (n=300) in one city in Northern Jordan. The sample was aged 29-80 years, 62% having less than a high school education and the majority (77.7%) were male. The study revealed that 48.3% of the participants were active smokers with 11.7% having smoked in the past. The majority of the active smokers were male (89%). After a diagnosis of CHD, 70.3% of the patients were still smoking three months later while 29.7% had quit smoking. The reported reasons for continued smoking were "do not incline to stop smoking" (25.6%), "craving for a cigarette" (25%) and "other people around me smoke" (11.3%).

The majority (63.2%) of the patient participants in the current study reported that they intended to engage in physical exercise in the next six months, whilst 30.5% said that they were already doing so. Nearly a quarter (22%) reported that they had been exercising for six months or more, whereas 6.2% stated that they had little intention to take it up in the near future. Moreover, the illiterate patients were more hostile to taking up exercise than their counterparts. The commonly reported barriers to exercise were being too far away from facilities (60.8%), the lack of convenient opening times of exercise facilities (54.8%) and that exercise tired them (54.0%). This is similar to both Al-Nsour et al.'s (2012) and Mukattash et al.'s (2012) studies which reported that 38% and 41%, respectively, of their patients engaged in regular physical activity. There is a lack of research on the low levels of physical activity in Jordan. Eshah (2011) has argued that the low levels of physical activity could be related to the Jordanians' perceptions of physical activity as not being part of the daily routine. Ammouri et al. (2007) assessed the levels of physical activity of Jordanian adults aged 18-75 years (n=285) across three cities in Jordan. The study revealed that the male participants reported more physical activity than the females ($p<0.05$). Age, gender, income,

education, perceived self-efficacy, perceived benefits and competing demands were related to physical activity. Additionally, the participants who perceived more exercise barriers reported less physical activity ($p<0.01$). This is similar to the current study which revealed that patients who perceived more exercise barriers were more likely to undertake less physical activity ($p=0.009$).

From the current study findings, it also emerged that 39% of the patients reported overweight body size and 39.2% underweight body size. This is consistent with the WHO (2013c) which acknowledged that the prevalence of obesity among male and female Jordanians was 27.3% and 41.7%, respectively in 2008. Comparing the personal health behaviour data between the patients with heart disease and those without, it appeared that the former were more likely to have smoked in the past and were of overweight body size. Conversely, those without heart disease were more likely to have never smoked and were below or normal body weight size. Additionally, the patients with heart disease reported more barriers to doing exercise and were more likely to be at the pre-contemplation and contemplation stages of change relating to undertaking physical exercise compared to those without heart disease. This is in line with existing knowledge which suggests that adults without heart disease are more likely to have never smoked and to be within normal body weight (WHO, 2013a).

8.3 Role legitimacy of Registered Nurses in general health promotion

The WHO (2012) has highlighted how healthcare professionals have a vital role to play in disease prevention. In particular, RNs as part of multidisciplinary teams have been identified as ideally placed to reduce risk factors associated with non-communicable diseases globally, especially in countries such as Jordan which has limited resources. The International Council of Nurses (2010a) has also identified nurses as key

contributors to the public health efforts to enhance, for example, smoking cessation and other health promoting behaviours. They are also ideally positioned to enhance health promoting activities to decrease the risks of obesity. Research indicates that RNs have an effective role in assessing the health needs of patients and a key role in preventing the disease risk factors associated with CVD (Allison et al., 2000; Persson and Friberg, 2009; Smith and Burgess, 2009).

The role legitimacy of nurses has been defined as the appropriateness of areas of practice and the scope of professional practice as well as the boundaries of that practice (Shaw et al., 1978). In addition, Machin and Stevenson (1997) have described how role legitimacy can be separated into formalised and non-formalised. Formalised role legitimacy is recognition of the legitimate areas of practice by statutory and professional bodies, while non-formalised role legitimacy focuses on the informal understanding and negotiation which occurs between individual groups regarding areas of legitimacy (Machin and Stevenson, 1997). The literature review indicated that there have been no studies exploring the role legitimacy of RNs regarding health promotion in Jordan. The aim of this study was, therefore, to explore the RNs' role legitimacy in health promotion with a particular focus on CVD. The current study collected data relating to the non-formalised role legitimacy of RNs as perceived by stakeholders, specifically RNs, doctors and patients.

8.3.1 Perceived role legitimacy and activities of Registered Nurses in health promotion

There has been intense debate regarding whether health promoting activities are part of the RNs' or doctors' role legitimacy. There is some evidence suggesting that RNs have role legitimacy and a good knowledge base regarding health promotion (Park, 2005;

Douglas et al., 2006; Chan et al., 2007; Kelly and Abraham, 2007; Whitehead et al., 2008). Cross-sectional surveys of two samples of 757 primary care staff (RNs, GPs and health visitors; response rate 54%) and 86 health professionals (RNs and HCAs, response rate 41%) from the UK reported that health promotion was part of the nursing role (Douglas et al., 2006; Kelly and Abraham, 2007). While Douglas et al.'s (2006) study did not report the details on the validity and reliability of the study instruments, the study findings provided useful insight regarding the RNs' role in health promotion. Douglas et al.'s (2006) study also found that more RNs than doctors advised patients to engage in physical activity. Consistent with the above findings, a further two studies from China, have demonstrated that the RNs had a high-level of understanding of health education and health promotion within clinical practice (Chan et al., 2007; Whitehead et al., 2008). The large cross-sectional survey of 1,690 Chinese RNs by Chan et al., (2007) reported that the majority of the RNs had a good knowledge of smoking cessation and were competent to advise smokers about the health risks of smoking. While such findings are of interest, Kelly and Abraham's (2007) study is limited by a small sample size.

In contrast, a qualitative study by Nolan et al. (2012), from the UK demonstrated that, although the RNs possessed the communication skills and ability to build relationships with patients, their role legitimacy in health promotion was limited and its legitimacy in clinical practice questionable. The study provided insufficient data on the participants' characteristics, however, to make meaningful generalisations. In Jordan, limited research has focused on the RNs' role in health promotion. A recent mixed method study of 49 Jordanian RNs and nine Jordanian practical nurses from one teaching hospital explored the nurses' role in health promotion within hospital settings from the perspective of nurses using a semi-structured questionnaire, focus groups and non-

participant observation (Shoqirat and Cameron, 2012). This study which was limited by its small sample size revealed that, although nurses held positive views about their role in health promotion, their actual health promotion role within hospitals was limited.

The current study also indicated a range of views about the role and activities of RNs in health promotion. Although the majority of the RNs, the doctors and the patients reported that the RNs should be more involved in health promoting activities, the RNs had more positive views about their role legitimacy in health promotion compared to both the patients and the doctors, with the doctors doubting how well-prepared RNs were to undertake an active role in health promotion. The perception of doctors that activities in relation to health promotion should not be under the legitimate role of RNs was previously noted in Jordan in a large scale study (n=963, response rate 77%) of nurses, doctors and patients (Shuriquie, 2006). However, recent RCT studies have demonstrated that the RNs can take an effective role in promoting the health of patients with, for example, CVD (Zhao and Yuet 2009; Han et al., 2010). An RCT study of 220 Chinese patients with post-angina or myocardial infarction found a significant increase in the patients' disease knowledge and satisfaction following a nurse-led intervention over a three-month period (Zhao and Yuet, 2009). .

The present study findings indicated that the majority of the participants did not consider it important for the RNs to obtain the permission of doctors when implementing health promotion within clinical practice. The RNs, however, had significantly more positive views regarding this matter compared to both the doctors and the patients, suggesting that the RNs felt more confident in their ability to implement health promotion activities. The current study also suggested that there were differences in perceived roles between the RNs related to their age and training in health

promotion, with those aged 20-29 years and having no training in promoting exercise, for example, considering it important to request the permission of doctors when providing health promotion counselling. This suggests perhaps that RNs who have more limited clinical experience and have had no training in health promotion may have limited confidence in their health promotion activities.

It is not surprising that the majority of the RNs (73.9%), the doctors (69.4%) and the patients (72.5%) in the current study reported that the RNs should give priority to acute care over health promotion activities, given that the average length of stay in Jordanian hospitals (i.e. public, private and RMS) is short at 3.5 days in 2009 (United States Agency for International Development, 2011), which may lead to a greater need for acute and high dependency care. However, the increased prevalence of unhealthy lifestyle behaviours and chronic diseases, for example, CVD in Jordan (WHO, 2013c) also requires health promotion activity within all settings, including hospitals. Indeed, the RNs in the current study reported having the necessary skills and knowledge to implement health promotion within acute care and thus they could be ideally positioned to be responsible for health promotion.

The current study findings suggest general consensus amongst the RNs, the doctors and the patients, regarding lack of time as a key hindering factor to health promoting activities. This view was most strongly expressed by the RNs. Aldossary et al.'s (2012) cross-sectional survey sample (n=1066) of Saudi Arabian nurses, doctors and patients also found that time was a restricting factor for health promotion by nurses. The perceived lack of time may be associated with the increasing workload as Hamaideh et al.'s (2008) cross-sectional survey of Jordanian hospital nurses (n=464, response rate 66.3%) reported that high workloads was one of the major challenges facing nurses

within clinical practice in Jordan. This lack of time in relation to high workloads could inhibit the role legitimacy of RNs in health promotion within clinical practice in Jordan.

The turnover rate of RNs has been reported as an issue for nurses in Jordan (Hayajneh et al., 2009). Hayajneh et al.'s (2009) study found that the RNs turnover rate was over one third (36.6%) during a one-year period. One possible explanation for the high rate of turnover could be poor job satisfaction among RNs in clinical practice as highlighted in Mrayyan's (2005) cross-sectional survey of 438 Jordanian nurses. Furthermore, the high RNs turnover rate may also be due to the low salaries which encourage RNs, particularly those with extensive clinical experience, to seek work overseas in order to improve their incomes. According to the Jordanian Nurses and Midwives Council (JNMC) (2013), the total number of RNs who are registered with them is 25,870 with 11% (2,934 RNs) working abroad. This high turnover rate and the significant number of emigrating RNs could possibly affect the stability of nursing workforce in Jordan and may also help to explain the limited health promotion activities of RNs within clinical practice. Shoqirat and Cameron (2012) have revealed that the pattern of nurses emigrating has had a negative impact on the remaining nurses' morale within organisations in Jordan. It can be speculated that those RNs remaining in Jordan are less experienced practitioners who are focused mainly on familiarising themselves with clinical practice. Interestingly, the majority of the RNs (71.5%) in the current study were aged 20-29 years indicating that they may have limited clinical experience.

According to the International Council of Nurses (2010b), nurses have a key role to play in health promotion with individuals, families, groups and communities across different settings. The majority of the participants in the current study did not identify the RNs' skills as a restricting factor for health promotion although, significantly, more doctors

than the RNs and the patients perceived this to be an issue. Interestingly, the majority of the RNs and the patients were more likely to consider the RNs as being capable of providing health promotion related to the patients' diagnosis and prognosis and of consulting the patient regarding planned care. However, the doctors reported negative views of the RNs' capabilities of providing health promotion. This negative perception of RNs' capabilities held by the doctors could be due to a belief that they should hold the prime responsibility for all aspects of patient care. Furthermore, this could also be related to the education system in Jordan where medicine continues to have a higher status than nursing.

Despite reporting that the RNs have the necessary skills and knowledge to deliver health promotion, few of the RNs reported receiving post-qualification training in health promotion. A previous study from Saudi Arabia (Aldossary et al., 2012) also found a small number of nurses receiving health promotion training which may suggest limited training not only in Jordan but also in other countries in the Middle East. The current study suggested that there were significant differences among the RNs regarding training in health promotion associated with their age, with those RNs aged 40 years and over having more training in smoking cessation, for example, than their younger counterparts. This lack of health promotion training could be due in part to an emphasis on meeting critical care needs as reported by Shuriquie et al. (2007), with the majority of specialist training and continuing education nursing programmes in Jordan focusing on critical care rather than aspects of health promotion and disease prevention. A cross-sectional study (Chan et al., 2007) of 1,690 Chinese RNs (response rate 97%) suggested that there is a link between health promotion training and confidence and competence in health promotion within clinical practice. Despite that, the majority of the RNs in the current study reporting they had not had additional health promotion training, both they

and the patients reported that they had the necessary skills and knowledge to undertake health promotion activities.

It has been suggested that communication difficulties between RNs and their patients could also hinder health promotion activities by the RNs (Arnetz et al., 2008). In the current study, 46% of the patients perceived language as a barrier to health promotion by the RNs, whereas the RNs and the doctors perceived this to be less of a problem. However, the majority of the RNs in the current study were Jordanian, similar to their patients, and spoke Arabic. The possible explanation for reporting language as a barrier to health promotion by RNs, therefore, might be that healthcare professionals, including RNs, may use medical terminology to communicate in the clinical setting, which could result in a significant number of patients feeling that they were not understanding the RNs. This language challenge between health professionals and patients was also noted in a qualitative study (Farahani et al., 2011) of 22 health professionals, nine patients and four family members recruited from two sites in Iran in which the patients reported that the RNs' use of medical terminology was an issue, creating a barrier to effective communication.

Hoeve et al. (2013) has suggested that the public image of nursing is based on misconceptions and stereotypes. The majority of the patients (72.2%) in the current study perceived the doctors to be responsible for teaching nurses, which may reflect common stereotypes in Jordan whereby the doctors are seen by the patients as the key players in healthcare provision and at the pinnacle of the healthcare hierarchy. Shoqirat (2009) suggested that the problem is not only related to the public image of nurses in Jordan as being a female and domestic profession but to the power differential between the nurses and the doctors in hospitals. This public image of the RNs as being

responsible for domestic activities and the doctors at the top of the healthcare hierarchy may make the RNs feel uncertain about their role legitimacy in health promotion and thereby affect their confidence and willingness to undertake health promotion activities within their clinical practice.

The current study also found a lack of awareness on the part of the patients regarding the nature of the role and activities of the RNs with a third of the patients not knowing the difference between the activities of the RNs and the practical nurses. This lack of awareness between the activities of the RNs and the practical nurses could lead to a possible undermining of the RNs' role legitimacy versus that of practical nurses. This is exemplified in the finding that the majority of the doctors and the RNs shared the view that the patients took little notice when the RNs advised them about aspects of their lifestyle, suggesting that RNs may face difficulties when implementing health promotion within clinical practice in Jordan.

The current study findings also suggested that the patients were unwilling to receive education about their health-related behaviours by RNs. For example, there was general consensus across all the participants that the patients felt annoyed when the RNs asked about health-related behaviours when it was not directly related to their current health problems. This finding, related to the patients' attitudes, has been noted before in an earlier survey (Haddad and Umlauf, 1998) conducted in Jordan in which the participants also attested to the inability of the healthcare professional to change the patients' health-related behaviours. One possible explanation for these findings could be related to religious beliefs. The majority of the Jordanian population (92%) are Muslims and having faith in God and accepting one's fate is a culturally acceptable coping strategy (Shuriquie, 2006). The impact of the Islamic religion has also been noted in a

qualitative study (Nabolsi and Carson, 2011) which found that the patients' faith played a key role in their health choices and in accepting or rejecting personal responsibility for promoting their health and well-being in Jordan. That is, the Islamic faith in Jordan potentially influences people's lifestyles particularly their health-related behaviours.

8.3.2 Personal health behaviours of the sample group and their views on the Registered Nurses' role legitimacy in general health promotion

Healthcare professionals including RNs are in a position to discuss health-related behaviours given their ability to access a large proportion of the population. They are, however, not immune to engaging themselves in unhealthy behaviours, such as smoking and physical inactivity. The current study suggested a high-level of smoking among the health professionals with approximately 30% of the RNs and the doctors being active smokers. This level of smoking behaviour has also been found among Bosnian doctors and nurses in a cross-sectional survey of 112 doctors (response rate 73%) and 97 nurses (response rate 81%) where 51% of the nurses and 40% of the doctors were active smokers (Hodgetts et al., 2004).

The current study suggested that those participants with unhealthy personal behaviours, such as smoking, were less likely to have positive views regarding the RNs' role in health promotion. For example, more smoker RNs in the current study significantly considered that they should not interfere with the patients' lifestyle and advise them to change their health related behaviours compared to the ex-smoker and the non-smoker RNs. The association of the RNs' and doctors' smoking status with their views on health promotion has been reported in two earlier cross-sectional studies conducted in Jordan (Merrill et al., 2008; Shishani et al., 2011). Merrill et al.'s (2008) study of 262 nurses (response rate 85%) and 251 doctors (response rate 67%), for example, reported

that those nurses and doctors who smoked were less likely to feel that they were prepared to promote smoking cessation.

The current study findings suggest that there is no significant association between the health professionals' body weight size and their views regarding health promotion by RNs. This finding is in contrast to two systematic reviews (Zhu et al., 2011a; Zhu et al., 2011b) and one cross-sectional survey (Hendershot et al., 2008). The two systematic reviews have suggested that the health professionals' (doctors and nurses) personal weight status may influence their attitudes towards weight management (Zhu et al., 2011a) and their weight management practices (Zhu et al., 2011b). Zhu et al.'s (2011a) review indicated that those health professionals who had a normal weight were more likely to have positive attitudes towards weight management in their clinical practice, while those who were overweight or obese were more likely to hold negative views towards weight management within clinical practice. Zhu et al.'s (2011b) other review also suggested a relationship between the health professional's personal weight status and their weight management in clinical practice, with those overweight or obese health professionals being less likely to implement weight management activities compared to their normal weight counterparts. Similarly, a large sectional survey of 2,629 American school nurses (Hendershot et al., 2008) reported that those RNs who had higher BMIs were more likely to report more barriers to measuring the BMI of their school pupils compared to those with lower BMIs. The contrasting findings of this study may be explained by the different measurement; this study used a figure rating scale rather than self-reported BMI data.

There are a limited number of studies which have focused on the association between RNs' personal physical exercise and promoting physical exercise within clinical

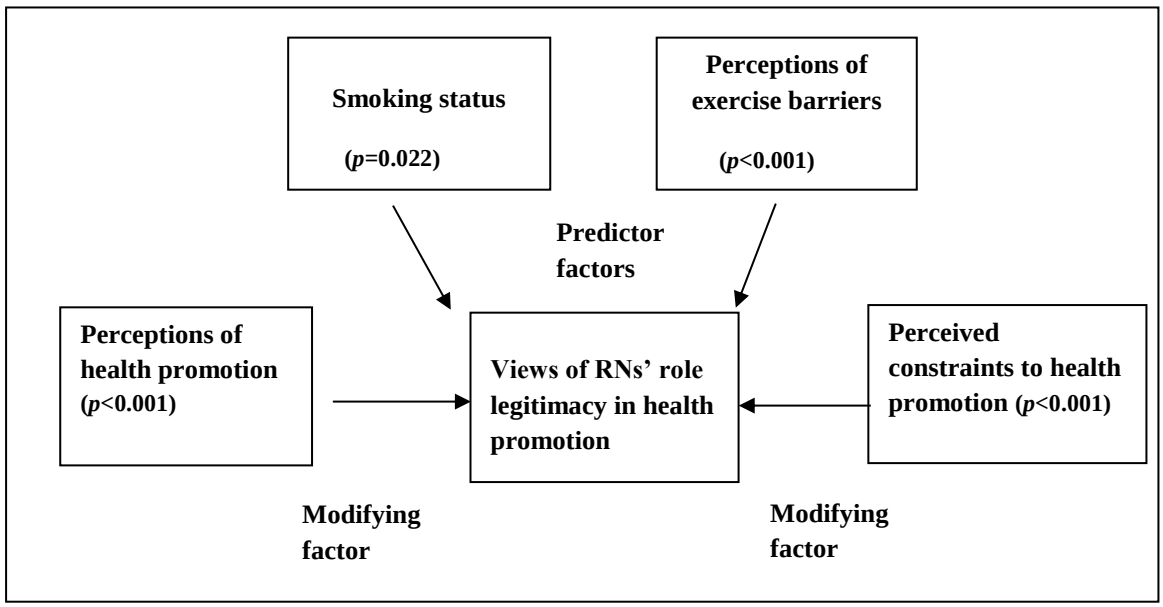
practice. Fie et al.'s (2012) systematic review reported inconsistent findings regarding the personal physical exercise behaviour of health professionals (i.e. doctors and nurses) and their promotion of physical exercise within their clinical practice. However, the current study data suggested that the RNs' personal physical exercise was significantly associated with their views regarding their role and activities in health promotion, with those RNs who were at the maintenance stage relating to their personal physical exercise being more likely to have positive views of their role in health promotion, in comparison to those who were at the pre-contemplation stage. Interestingly, this study also indicated that the patients who reported that they were at the contemplation and action stages relating to their personal physical exercise were more likely to hold positive views regarding the RNs' role in health promotion. In addition, the doctors who were at the pre-contemplation stage relating to their personal physical exercise were less likely to have positive views towards health promotion by RNs. The association of the doctors' personal physical exercise with their promotion of physical exercise has also been found in an early survey (Abramson et al., 2000) of a random sample of 304 American doctors, which suggested that the doctors who undertake regular physical exercise are more likely to promote physical exercise compared to those who are not active. While of interest, this study reported a poor response rate (response rate 24.8%).

Furthermore, the current study suggested that the RNs who perceived fewer barriers to undertaking physical exercise were more likely to report positive views regarding their role in health promotion compared to those who reported more barriers to undertaking physical exercise. It is of note that those doctors who perceived more barriers to undertaking physical exercise, did not perceive a role for the RNs in health promotion.

8.3.3 Developing an explanatory model of Registered Nurses' views of their role legitimacy in general health promotion in Jordan

This section presents the first part of an explanatory model regarding the RNs' role legitimacy in general health promotion from their perspective. Reflecting that nursing is an independent profession with its own regulatory bodies (JNMC & JNC) in Jordan, it is, however, still in its infancy. The Jordanian Nursing Council (2011b) recognises the need for professional self-governance and the role for nurses in the development of their profession and scope of professional practice. In-depth analysis was, therefore conducted on the RNs' data set to understand their perceived role in health promotion. Specifically, general linear modelling (GLM) was undertaken to assess which predictor factors were influential beyond the bivariate analysis and to explore any modifying factors for the RNs' role in general health promotion. That is, the significant findings from the bivariate analysis were taken forward to the multivariate analysis for further testing. Interestingly, some categorical variables from the bivariate analysis, such as the RNs' body weight size, did not prove to be significant in the GLM.

Figure 8.1: An explanatory model of the Registered Nurses' views of their role legitimacy in general health promotion in Jordan



The model (See Figure 8.1) built upon the GLM suggests that the RNs' personal health behaviour is a predicting factor regarding their views of their role and activities in relation to health promotion, with those who reported having healthy lifestyles, for example, undertaking physical exercise, being more likely to report positive views compared to those with an unhealthy lifestyle. However, no association in the current study was found between the RNs' body weight size and their views regarding their role and activities in health promotion. Interestingly, the RNs' personal physical exercise was strongly associated with their views regarding their role and activities in health promotion ($p<0.001$), with those who perceived more barriers to undertaking regular physical exercise being more likely to view health promotion activities as not part of their role compared to those who reported fewer barriers. Only a few earlier studies have been conducted to explore the relationship between RNs' physical exercise and their views regarding their role and activities in health promotion within clinical practice (McDowell et al. 1997; Burns et al. 2000), with Fie et al.'s (2012) review, for example, reporting inconsistent findings about the relationship between the RNs' personal physical exercise and their promoting it within clinical practice. The current study therefore adds to the evidence that there is an association between the RNs' personal physical exercise and their views regarding their role legitimacy in health promotion within their clinical practice.

The model (See Figure 8.1) also suggests that there is a strong association between the RNs' smoking status and their views regarding their roles and activities in health promotion within their clinical practice ($p=0.022$). That is, the non-smoker RNs were more likely to perceive health promotion activities as being part of their role compared to those who were smokers. The association of RNs' smoking status with their views regarding their role and activities in health promotion has also been reported in another

study (Merrill et al., 2008), with nurses who smoked being less likely to consider themselves capable of promoting smoking cessation compared to their counterparts. Similarly, almost half of the RNs in Chan et al.'s (2007) cross-sectional study reported that only the non-smoker RNs had an effective role in promoting smoking cessation compared to smokers within clinical practice. Therefore, the findings of the current study confirm this previous evidence (Merrill et al. 2008; Shishani et al. 2011) that there is an association between the RNs' smoking status and their views regarding their role and activities in health promotion.

The model (See Figure 8.1) also suggests that there are modifying factors which can have a powerful effect on the RNs' views regarding their role and activities in health promotion, including their general perception of health promotion and constraints to health promotion. There was a positive association between the perception of health promotion by the RNs and their views about their role legitimacy and activities related to health promotion ($p<0.001$), with those RNs who reported positive views being more likely to view health promotion as appropriate within their roles in clinical practice. This study finding is similar to that of Barreca and Wilkins's (2008) phenomenological study which revealed that the nurses who held positive views regarding health promotion were more likely to consider health promotion as part of their role in practice. Thus, the current study finding adds new evidence that there is a positive relationship between the perception of RNs regarding general health promotion and their views on their role and activities in relation to health promotion.

Furthermore, constraints to health promotion by the RNs were strongly associated with their views of their role and activities in health promotion within clinical practice ($p<0.001$), with the RNs who reported more constraints to health promotion being less

likely to hold positive views about their role and activities compared to those who reported few constraints. The key constraints identified from the current study were lack of time, the public image of nurses and negative attitudes of patients toward changing their health-related behaviours. These findings are similar to those of other studies which variously reported constraints to health promotion by nurses including lack of time and staff (Wang et al. 2009; Wu et al., 2011; Shoqirat and Cameron, 2012), cultural/language differences (Arnetz et al., 2008; Farahani et al, 2011; Shoqirat and Cameron, 2012) and the patients' unwillingness to change their lifestyle (Hernandez and Anderson, 2012). The findings of the current study therefore support the previous evidence that there is a relationship between constraints to health promotion by RNs and the views on their role and activities regarding health promotion in which these constraints inhibit their role legitimacy in health promotion within clinical practice in Jordan.

The next section of the discussion focuses on the role legitimacy of RNs in health promotion regarding CVD. It further develops the explanatory model regarding health promotion by RNs with a particular focus on CVD in Jordan.

8.4. Role legitimacy of Registered Nurses in health promotion relating to CVD

The previous section set out a model of the RNs' role legitimacy relating to general health promotion in Jordan. According to the WHO (WHO, 2013b), CVD is the leading cause of death in Jordan, accounting for 40% of all deaths in 2010. No published studies have focused on the role legitimacy of RNs in health promotion relating to CVD in Jordan. This section focuses on this role legitimacy from the perspective of the RNs, the doctors and the patients as well focusing on the RNs' knowledge of the disease.

8.4.1 Role legitimacy of Registered Nurses in health promotion relating to CVD across all healthcare sectors

The RNs, the doctors and the patients across all healthcare sectors reported different views about the RNs' role in health promotion regarding CVD in Jordan with limited evidence of the RNs' informal role legitimacy in relation to health promotion regarding CVD. The RNs, however, were more likely to hold positive views regarding their role with no significant differences regarding their positive views across the different clinical settings (i.e. medical and surgical wards, outpatient clinics and primary healthcare centres). The positive views of the RNs are consistent with those of other studies (Leung et al., 2005; Barreca and Wilkins, 2008) in a variety of clinical settings in which the RNs reported positive views regarding their role in health promotion relating to CVD. Barreca and Wilkins (2008) recruited RN sample from rehabilitation settings in Canada, while Leung et al. (2005) recruited nurses from hospital outpatient clinics in Hong Kong. The current study findings also suggest that, irrespective of the clinical settings, the RNs in Jordan, like nurses elsewhere, perceive health promotion relating to CVD as part of their role legitimacy in clinical practice.

The current study suggests that the female RNs were more likely to report positive views regarding their role in health promotion relating to CVD compared to the male RNs. This may indicate that the gender of RNs in Jordan influences the perceived role legitimacy of RNs in health promotion relating to CVD with the female RNs being more confident about their role compared to the male RNs. Evidence from previous research in Jordan demonstrated that the male nurses were more likely to change their career compared to the female nurses who intended to stay in the profession longer (Shuriquie et al., 2008; AbuAlRub, 2010).

The study findings suggest that the doctors were less likely to report positive views compared to the RNs regarding the RNs' role in health promotion relating to CVD. This is similar to the doctors reporting negative views regarding the RNs' role in general health promotion. This may be a reflection of an established hierarchy among healthcare professionals in Jordan, whereby recruitment to the medical profession is highly competitive and requires a minimum grade average of 85% in high school, compared to nursing, which requires a minimum of 70% (University of Jordan, 2013). Another possible explanation for the negative views of the doctors regarding the RNs' role could be due to a lack of nurse autonomy in Jordan. This lack of autonomy has been noted in the current study findings, for example, where both the doctors and the patients, in contrast to the RNs, reported that nurses should not decide independently of doctors what nursing care is appropriate for their patients. This finding regarding lack of RNs autonomy has also been reported in Shoqirat and Cameron's (2012) mixed methods study, which involved Jordanian nurses (n=58) working in medical and surgical wards within a teaching hospital. These authors found a lack of nurse autonomy in practice which they suggested may be associated with a power imbalance between doctors and RNs in Jordan, which limits the role of RNs to undertake health promotion activities.

Other published studies have focused on nurse autonomy and the RNs' role in general health promotion (Casey, 2007) and relating to CVD (Halcomb et al., 2008) in different clinical settings. Casey's (2007) qualitative study (non-participant observation and semi-structured interviews) with eight Irish RNs revealed that lack of role autonomy was a barrier to undertaking general health promotion in acute surgical wards where the doctors exercised the most power. Similarly, Halcomb et al.'s (2008) mixed methods study of Australian general practice nurses (n=294) explored the barriers and facilitators to developing the practice nurse role in CVD management. Their findings suggested

that the dominant role of the doctor in practice was a barrier to the extension of the practice nurse role in the management of CVD. Specifically, the doctors did not value the role of practice nurses in either: patient education, risk factor screening, symptom monitoring or in health assessment. In addition, the Australian practice nurses reported that their restricted scope of professional practice prohibited them from extending their role. The poorly articulated health promotion role of the RNs in Jordan may also restrict their ability to undertake health promotion activities regarding CVD in practice.

The current study findings also revealed that the patients, as compared with the RNs and the doctors, reported less positive views regarding the RNs' role in health promotion relating to CVD with no significant differences reporting between the general patients and those who had heart disease. They were, for example, more likely to support the RNs' role in health promotion relating to CVD only if they themselves identified the need for health promotion or if it was related to their current health problems. Interestingly, the patients also reported negative views regarding the RNs' role in general health promotion which was highlighted in the RNs' role legitimacy in general health promotion part of the discussion, for example, they felt annoyed when the RNs asked about their health-related behaviours when it was not directly related to their current health problems. In the UK, patients with heart disease, however, reported positive views regarding the RNs' role in health promotion regarding CVD as noted in Jones et al.'s (2009) qualitative study of 26 patients. All the patients who had completed a home or hospital-based CR programme in Jones et al.'s (2009) study, for example, reported that the RNs' role in health promotion was effective and helped increase their knowledge of heart disease. Additionally, they reported that nurses had sufficient disease knowledge and that they had made lifestyle changes as a result of the information that they had received from the RNs. The finding of the current study

relating to the negative views of the patients regarding the RNs' role was also reported in Saudi Arabia by Aldossary et al.'s (2012) survey (n=1066) in which the patients reported that they only wanted to receive health promotion from the nurses if it was related to their current health problems. This may reflect the similar views of the Jordanian and Saudi Arabian patients regarding health promotion by RNs.

8.4.2 Role legitimacy of Registered Nurses in health promotion relating to CVD in different healthcare sectors

The study findings indicate that there were different views regarding the role of RNs in health promotion relating to CVD across the three healthcare sectors, i.e. public, private and RMS. The different views regarding this role could be due to the limited nursing legislation governing in practice in Jordan, which has resulted in a variation of roles and responsibilities of RNs across the different healthcare sectors, as highlighted by the Jordanian Nursing Council (2011b). The RNs, the doctors and the patients who were recruited from the public sector were more likely to report positive views on the RNs' role in health promotion relating to CVD compared to those recruited from the other healthcare sectors. A possible explanation for this could be due to the Ministry of Health in Jordan's focus upon health promotion and disease prevention in the primary, secondary and tertiary healthcare services, as highlighted in the National Health Strategy (2006-2010) (MoH, 2013e). This finding may therefore reflect the more formalised role legitimacy afforded by the Ministry of Health to the RNs' role in health promotion regarding CVD in public hospitals and primary healthcare centres. Another possible explanation for the more positive views of those recruited from the public sector might be due to the role of RNs in the primary healthcare services within this sector. That is, the public sector delivers primary healthcare services through 92 comprehensive health centres and 372 primary healthcare centres in Jordan (MoH,

2013). The large number of primary healthcare centres may mean that the RNs working in this sector are better placed to engage in health promotion activities regarding CVD, although limited evidence has, for example, been found to support this. The RNs' role in health promotion within the public sector has been reported in Hasna et al.'s (2010) qualitative study of four primary healthcare centres in Jordan. Using non-participant observation, the RNs' role was found to include health promotion activities in three out of the four centres.

The current study found that the RNs, the doctors and the patients employed in the private sector were less likely to report positive views of the RNs' role in health promotion regarding CVD compared to those recruited from the other healthcare sectors. This may be due to the limited formalised role legitimacy in the private sector, for example, the policies of private hospitals. Each hospital has the power to decide upon the RNs' role independently (Shuriquie, 2006) and as a consequence, some may not be oriented towards the RNs' role in health promotion relating to CVD. In the current study, the RNs from the private sector were less likely to receive health promotion training, for example in weight management, compared to those working in the public sector and the RMS, suggesting that the private sector does not prioritise health promotion activity. This may in part be due to the short length of patient stay and associated care priorities in the private sector. The average length of stay in the private hospitals in 2009 was only 2.2 days (United States Agency for International Development, 2011), which could make it difficult for the RNs to engage in health promotion activities when the focus is on acute and high dependency care. The less positive views of the participants from the private sector suggests, perhaps, that the role legitimacy of RNs in health promotion regarding CVD is limited within this sector compared with the other healthcare sectors.

8.4.3 Registered Nurses' knowledge of CVD

No published studies have examined the RNs' knowledge of CVD in Jordan. This study, therefore, set out to explore RNs' knowledge of CVD and its association with their views on role legitimacy in health promotion relating to CVD. Sixteen items of the CVD Knowledge Scale (John et al., 2009) were employed to assess the RNs' knowledge.

The current study revealed high CVD knowledge scores amongst the RNs. The mean knowledge percentage score for the RNs was 81% (13 out of 16) (SD. 2.076). This finding relating to the high knowledge of CVD amongst the RNs is consistent with that of Wu et al.'s (2011) survey of Chinese hospital RNs (n=273). Although the current study and Wu et al.'s (2011) study focused on the RNs' knowledge of CVD risk factors, each utilised a different measurement tool. Other studies from different countries (e.g. Greece, Taiwan and the USA) have assessed, for example, nurses' (i.e. RNs and practical nurses) knowledge of self-care management in heart failure (Washburn et al., 2005; Delaney et al., 2011; Kalogirou et al., 2013) and knowledge of hypertension management (Chen et al., 2011). It is of note that these studies focused on different aspects of CVD knowledge, using different tools making the comparison difficult, nonetheless, the RNs in the current study had higher average scores than the nurses from these studies. This high CVD knowledge apparently suggests that the RNs in Jordan have the knowledge (role adequacy) to undertake health promotion in relation to CVD.

Regarding CVD knowledge across the healthcare facilities, the current study found that the RNs who worked in the cardiac institute scored significantly higher knowledge score compared with those who worked in the general hospitals. This finding is similar

to that of an earlier survey (Albert et al., 2002) of 300 American RNs and LPNs in which the cardiac nurses revealed higher knowledge scores than the hospital and community nurses. The high CVD knowledge among the cardiac RNs could be due to the speciality, with the RNs working in the cardiac institute engaging with CVD patients on a daily basis.

Interestingly, the current study findings revealed that there was a significant relationship between the RNs' knowledge of CVD and their views on their role legitimacy in health promotion regarding CVD. That is, those RNs who had higher knowledge scores were more likely to report positive views regarding their role, for example, in counselling patients regarding CVD without this being raised by the patients, compared with those who had lower knowledge scores. In contrast, those RNs with lower knowledge scores were more likely to report supporting health promotion regarding CVD only if it was related to the presenting health problems. This finding is similar to that of Segaar et al.'s (2007) cross-sectional survey of Dutch RNs (n=207), which also found a significant association between RNs' knowledge of CVD and their role in health promotion regarding CVD with those RNs who had higher knowledge scores being more likely to engage actively in health promotion activities regarding CVD. Therefore, these findings suggest that the RNs who have high knowledge regarding CVD are more likely to perceive that they have a role in health promotion regarding the disease in Jordan.

8.4.4 Personal health behaviours of the study sample and their views on the Registered Nurses' role legitimacy in health promotion relating to CVD

This section focuses on the RNs', the doctors' and the patients' personal health behaviours and its association with their perceptions of the RNs' role legitimacy in health promotion regarding CVD in Jordan. The current study suggests that there is an

association between the RNs', the doctors' and the patients' personal lifestyles and their views on the RNs' role legitimacy in health promotion regarding CVD.

In terms of CVD risk factors, the findings of the current study revealed that the smoker RNs, the doctors and the patients were less likely to report positive views regarding the RNs' role in promoting smoking cessation compared to their non-smoker counterparts. The relationship between the smoking behaviours of the nurses and the doctors and the promotion of smoking cessation in practice has also been reported in other studies (Hodgetts et al., 2004; Hall et al., 2005; Radsma and Bottorff, 2009) conducted, for example, in Bosnia, the UK and USA. Hodgetts et al.'s (2004) survey of 273 Bosnian nurses and doctors (response rate 81%) working in primary healthcare centres found that those health professionals who had never smoked were more likely to report positive views regarding their role in counselling patients on smoking cessation, compared to current smokers or those who had smoked in the past. The findings of the current study and Hodgetts et al.'s (2004) study are also similar to those of Hall et al.'s (2005) survey of 152 randomly selected British practice nurses. Hall et al. (2005) found that non-smoker practice nurses and those who had smoked in the past, perceived smoking cessation as an effective intervention and reported positive attitudes towards their role in delivering smoking cessation interventions, compared with the current smokers. The findings of the current study are also similar to those of Radsma and Bottorff's (2009) qualitative study of smoker nurses (n=23) working in community and hospital settings. These authors found that the smoking status of nurses had a relationship with their views as to whether to counsel patients to quit smoking or not. That is, the study findings indicated that the smoker RNs felt ambivalent about delivering smoking counselling in practice. In general, the findings of the current study

and those of previous studies suggest that there is a relationship between health professionals' smoking status and their views regarding promoting smoking cessation.

The current study also explored the association of the participants' body weight size and their views on the RNs' role legitimacy in health promotion regarding weight management. No significant relationship was found between the doctors and the patients' reported body weight size and their views on the RNs' role in promoting weight management within clinical practice. However, the RNs' reporting body weight size was associated with their perceived role of promoting weight management. That is, those RNs being normal or underweight in body size were more likely to consider themselves as being capable of providing health promotion regarding weight management, compared with those reporting being an overweight body size. Other research, for example, Zhu et al.'s (2011b) systematic review also found a relationship between health professionals' body weight and their promotion of weight management in practice, as highlighted in the RNs' role in general health promotion section of the discussion. Zhu et al.'s (2011b) systematic review revealed that those health professionals (nurses and doctors) with normal weight or underweight were more likely to promote weight management in practice compared with those who were overweight or obese. Similarly, Brown et al.'s (2007) survey (n=398, RR=72.3%) of British RNs and health visitors working in four primary care settings also found a relationship between the RNs' body weight and their views of promoting weight management. The study reported 14.1% of the total sample being obese (BMI over 30kg/m^2) and a further 28.6% overweight (BMI between 25 and 30 kg/m^2). They found that the RNs who had higher BMIs were less likely to report negative perceptions regarding promoting weight management. The similar finding of this current study and those of other studies (Brown et al., 2007; Zhu et al., 2011b) suggest that there is an association between the RNs'

personal body weight and their views of their role in health promotion regarding weight management in practice.

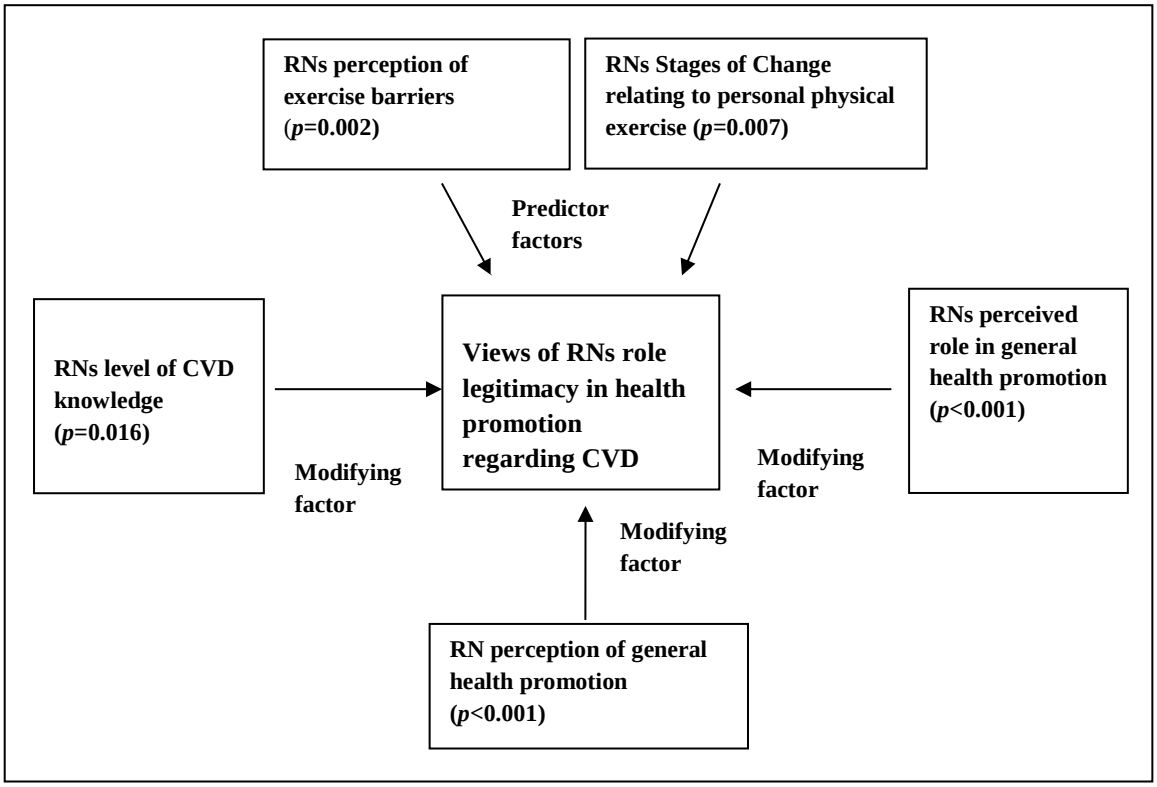
The current study also suggests that the RNs', the doctors' and the patients' personal physical exercise was related to their views regarding the RNs' role in health promotion regarding CVD. That is, the doctors who reported being at the pre-contemplation stage relating to their physical exercise were less likely to hold positive views regarding the RNs' role in promoting physical exercise compared with those who were at the action and maintenance stages. The current study also found that the RNs who reported more barriers to undertaking physical exercise were less likely to report positive views regarding their role in promoting physical exercise compared with those who reported fewer barriers. These findings are in contrast to those of Fie et al. (2012), whose systematic review found no clear relationship between the doctors' and the nurses' personal physical exercise and their role in health promotion regarding physical exercise in practice. Similarly, Howe et al.'s (2010) cross-sectional survey of 183 American doctors (102 trainee residents or fellows, 81 attending doctors) who were recruited from one site found no clear relationship between the doctors' personal exercise and the counselling of their patients on exercise. In Howe et al.'s (2010) study, although only 7.8% of trainees and 25.8% of attending doctors reported undertaking the recommended physical exercise (≥150 minutes of aerobic exercise per week), the majority of the sample doctors (70.4%) reported counselling over two-thirds of their patients and 36.6% of trainees counselled a similar proportion of the patients. However, generalisation of Howe et al.'s (2010) findings is questionable since the response rate was not reported and a non-random sampling method was used.

The findings of the current study, however, are similar to those reported in Puig Ribera et al.'s (2005) mixed method study, which randomly selected 237 Spanish health professionals (92 RNs and 145 doctors) from primary care settings (response rate 58%). This earlier research reported that those health professionals who were personally active were more likely to promote physical activity to all their patients, compared to those inactive health professionals. The possible explanation for the contradictory findings of both Fie et al.'s (2012) systematic review and Howe et al.'s (2010) study, and those of Puig Ribera et al. (2005) and the current study, could be due to the measurement tools of physical exercise. Each of these studies used different tools to measure the personal physical exercise of the recruited health professionals making any generalisations problematic.

8.4.5 Model of Registered Nurses' views of their role legitimacy in health promotion relating to CVD

General linear modelling was undertaken to assess which predictor factors emerging as statistically significant from the bivariate analysis and modifying factors influenced the perceived role legitimacy of the RNs in health promotion relating to CVD. The model (See Figure 8.2) explained 27.2% of total variability for the RNs' perceived role in health promotion regarding CVD.

Figure 8.2: Model of Registered Nurses' views of their role legitimacy in health promotion relating to CVD in Jordan



As indicated in Figure 8.2, the predictor factors for the RNs' perceived role in health promotion regarding CVD in Jordan include exercise barriers and Stages of Change relating to personal physical exercise. The current study suggests that those RNs who perceived fewer exercise barriers were more likely to hold positive views regarding their role in health promotion regarding CVD, compared to those who perceived more exercise barriers. Interestingly, this predictor factor also appeared in the RNs' perceived role in general health promotion model, suggesting that it is a powerful predictor factor for the RNs' role in health promotion regarding CVD. As indicated in Figure 8.2, the model also suggests that there is a strong relationship between the RNs' Stages of Change relating to their personal physical exercise and their views of their role in health promotion regarding CVD. Namely, those who were at the maintenance stage relating

to physical exercise were more likely to report positive views regarding their role compared to those who were at the pre-contemplation stage. The association of the RNs' personal physical exercise with their promotion of physical exercise has also been reported elsewhere (Puig Ribera et al., 2005). It is of note that the RNs' smoking status did not emerge in the model (See Figure 8.2) as a predictor factor for the RNs' perceived role in health promotion regarding CVD, although it has appeared in the model (See Figure 8.1) of the RNs' role in general health promotion. This could indicate that the smoking status of RNs is not a powerful predictor factor for the RNs' role in health promotion regarding CVD.

As shown in Figure 8.2, the model indicates that there are modifying factors for the RNs' perceived role in health promotion regarding CVD. These factors which include the levels of CVD knowledge, the RNs' perceptions of general health promotion and the RNs' perceived role in general health promotion have a positive relationship for the RNs' perceived role in health promotion regarding CVD. That is, those RNs who have a higher CVD knowledge are a more likely to perceive that they have a role in health promotion regarding CVD compared to those with lower CVD knowledge. This finding relating to the relationship between the RNs' knowledge of CVD and their role in health promotion regarding CVD has also been noted by Segaar et al.'s (2007) study, in which the RNs who had higher CVD knowledge were more likely to undertake health promotion regarding CVD compared to those with lower CVD knowledge. In addition, the model also suggests that the RNs' perceptions of general health promotion and their perceptions of their role in general health promotion are strongly associated with their role in health promotion regarding CVD. Namely, those RNs who hold positive views regarding general health promotion and their role are more likely to support their role in health promotion regarding CVD. This modifying factor relating to the RNs'

perceptions of general health promotion also appeared in the multivariate analysis of the RNs' perceived role in the general health promotion model (See Figure 8.2), suggesting that it is a powerful modifying factor influencing the RNs' perceived role in health promotion regarding CVD.

8.5 An explanatory model of the Registered Nurses' role in health promotion relating to CVD in Jordan

This section presents an explanatory model regarding the RNs' role legitimacy in health promotion relating to CVD in Jordan. The model draws on the findings from the multivariate analysis of the RNs data set and the findings in relation to the doctors and the patients. In addition, the model is guided by Machin and Stevenson's (1997) conceptual framework. The explanatory model (See Figure 8.3) suggests that the RNs' role legitimacy in health promotion regarding CVD can be considered from formalised aspects (e.g. role support from professional bodies) and non-formalised aspects (e.g. RNs', doctors' and patients' views). The explanatory model also suggests that there are personal influences (e.g. RNs' personal health behaviours) and constraint factors (e.g. lack of time) affecting this role.

According to Machin and Stevenson's (1997) conceptual framework, the optimum role function in practice can develop when the formalised dimension (i.e. agreement and policies) and the non-formalised dimension of each aspect of the role (i.e. role adequacy, role legitimacy and role support) are satisfactorily met. From the formal dimension, there seem to be no clear policies or guidance from the professional bodies (e.g. JNC and JNMC) which recognise the RNs' role legitimacy in health promotion relating to CVD. Indeed, it is acknowledged by the Jordanian Nursing Council (2011b) that the application and commitment to the regulation of the profession and the nurse's

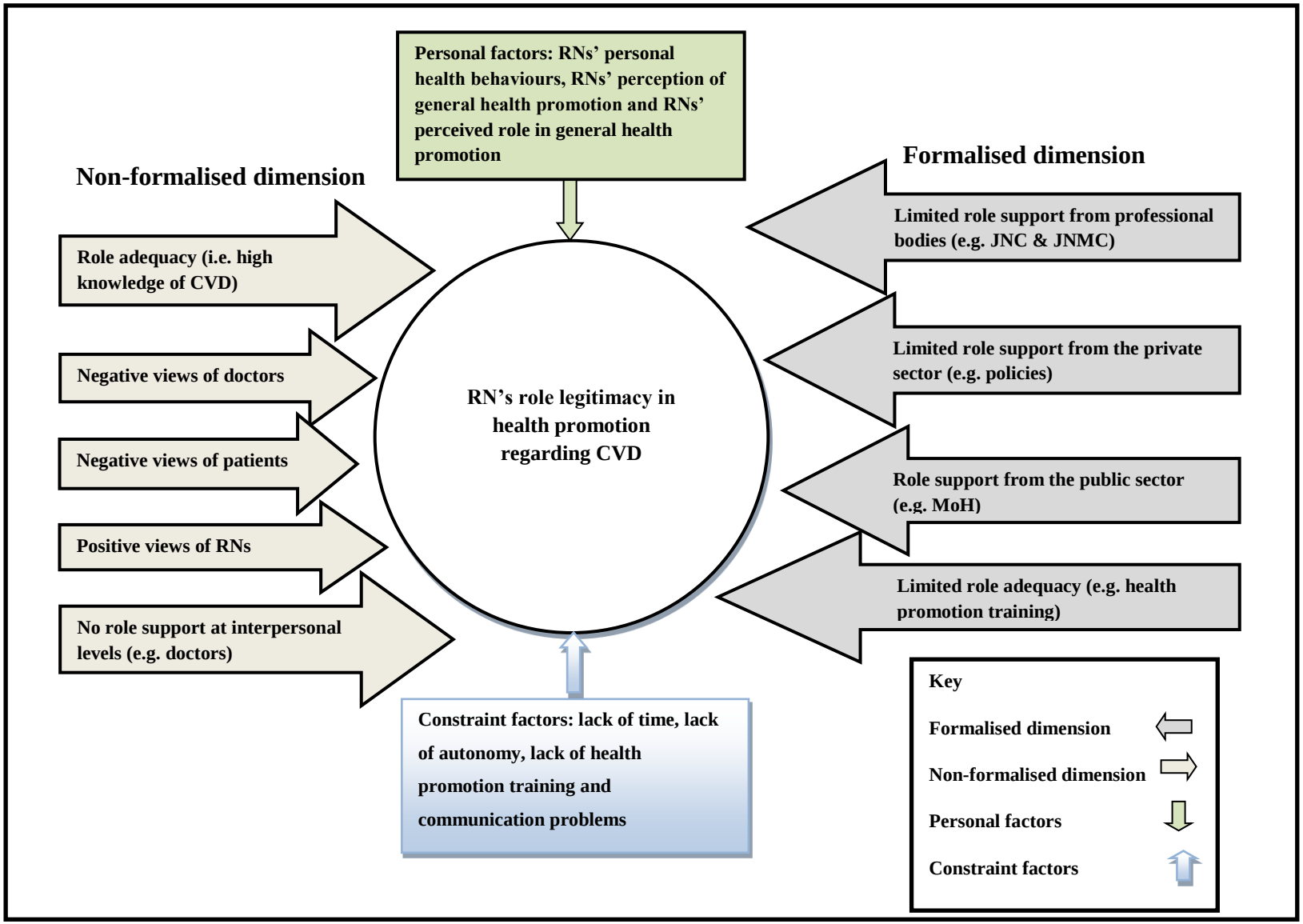
role in practice is weak. The explanatory model (See Figure 8.3) suggests that there is, in particular, a lack of formal support from the private sector regarding the RNs' role in health promotion regarding CVD. In contrast, the Ministry of Health in Jordan, which is responsible for public hospitals and healthcare centres, has in the National Health Strategy (2006-2010) recognised the role of RNs in health promotion activities (MoH, 2013e). Machin and Stevenson (1997) have also suggested that role adequacy can also be considered from both the formalised and non-formalised aspects of the role. The former relates, for example, to the formal regulations guiding pre- and post-registration programmes and qualifications. The RNs in the current study reported that they have had limited training in general health promotion and that relating to CVD, which suggests that they have limited role adequacy.

In terms of the non-formalised dimension of role legitimacy, Machin and Stevenson (1997) have suggested that this is concerned with informal understanding and negotiation between individual groups regarding the different areas of role legitimacy. The current study findings suggest that the RNs in Jordan have limited non-formalised role legitimacy in health promotion relating to CVD with the RNs, the doctors and the patients reporting different views regarding this role. The current study found that the RNs reported positive views regarding their role, whereas the doctors and the patients reported negative views regarding this role. Machin and Stevenson (1997) have also suggested that non-formal role adequacy is related to skills and knowledge, for example, clinical experience. The explanatory model (See Figure 8.3) suggested that those RNs who had a high knowledge of CVD were more likely to support their role in health promotion regarding CVD. According to Machin and Stevenson (1997), non-formalised role support is also concerned with supports between individuals at an interpersonal level (e.g. RNs and doctors). The current study indicates that the RNs

have limited role support from the doctors, reflecting their negative views regarding the RNs' role in general health promotion and relating to CVD.

As shown in the explanatory model (See Figure 8.3), personal factors influencing the RNs' role legitimacy in health promotion regarding CVD include the RNs' perception of general health promotion, the RNs' perceived role in general health promotion and the RNs' personal health behaviours. The RNs who reported positive views regarding general health promotion and of their role in general health promotion were more likely to support their role in health promotion regarding CVD. Also, there is a positive relationship between the personal health behaviours of RNs (i.e. smoking status and their physical exercise) and their role in health promotion regarding CVD. That is, the non-smoker RNs and those who engaged in regular physical exercise were more likely to support their role in health promotion regarding CVD compared to current smokers and those who did not engage in regular physical exercise. The relationship between the RNs' personal physical exercise and their views on health promotion regarding physical exercise in Jordan is of interest as there have been no prior studies exploring this relationship in Jordan. The relationship of the RNs' smoking status and their views on their role in smoking cessation has been reported in other studies in Jordan (Merrill et al., 2008; Shishani et al., 2011) and elsewhere (Hodgetts et al., 2004; Hall et al., 2005; Radsma and Bottorff, 2009). This indicates that there is a relationship between the Jordanian RNs' smoking status and those RNs elsewhere, and their promoting smoking cessation in practice which can be added to the evidence.

Figure 8.3: Explanatory model of the Registered Nurses' role legitimacy in health promotion relating to CVD in Jordan



The model (See Figure 8.3) suggests that there are some constraints to the RNs' role in health promotion regarding CVD including lack of time, lack of nurse autonomy and communication problems. These factors are identified by the findings of the current study and confirmed by other published studies (Harding et al., 2008; Aldossary et al., 2012; Shoqirat and Cameron, 2012) as factors limiting the RNs' role in health promotion regarding CVD.

8.6 Summary

The study findings suggest that the RNs perceived that they have role legitimacy in general health promotion and relating to CVD and displayed a high-level of CVD knowledge. However, the views of the RNs varied across the genders and personal health behaviours, with male RNs and those having unhealthy personal behaviours reporting less positive views about their role legitimacy in health promotion relating to CVD, compared with the other RNs. Across all the sample groups, the participants who were recruited from the private sector indicated less positive views regarding the RNs' role legitimacy in general health promotion and relating to CVD, compared with those participants recruited from the public and RMS sectors. The doctors and the patients did not perceive that the RNs have role legitimacy in general health promotion, nor relating to CVD. The doctors reported that the RNs did not have adequate skills to undertake health promotion, whereas the patients perceived that health promotion was not part of the RNs' role.

The explanatory model (See Figure 8.3) sets out the factors influencing the RNs' role legitimacy in health promotion relating to CVD in Jordan. The explanatory model (See Figure 8.3) suggests that the RNs' perceptions of general health promotion and their role in general health promotion, together with personal health behaviours, were

associated with their perceived role legitimacy in health promotion relating to CVD. In addition, the RNs perceived constraints to their role which included a lack of time and perceived role together with limited health promotion training and communication problems with patients.

The next chapter provides an overview of the strengths and limitations of the study and recommendations for policy, practice, education and recommendations for future research.

Chapter Nine

Conclusion

9.1 Study strengths and limitations

This chapter provides an overview of the strengths and limitations of the study.

9.1.1 Study design

According to Elwood (2007), the study design and methodology used should be appropriate to address the research question. A cross-sectional study was appropriate to explore the RNs' role legitimacy in health promotion relating to CVD in Jordan, as it allowed the collection of a broad range of views from three target sample groups (i.e. RNs, doctors and patients) across the three healthcare sectors (i.e. public, private and RMS) in Jordan. This design enabled contacting the participants (i.e. RNs, doctors and patients) at a single point in time to obtain their views regarding the role legitimacy of RNs in health promotion relating to CVD. Additionally, the cross-sectional survey design is useful to provide an overview of health related knowledge, views and practices, as McColl et al. (2001) have recommended, and provides a useful baseline for future research.

9.1.2 Study site and settings

The data collection was undertaken in Amman, which is one of 12 cities in Jordan. Amman was selected for the target population and sampling frame, as it is the capital city and has the largest population (a population of 2,842,629 in 2010) with the greatest number of general hospitals (n=36) of each healthcare sector (MoH, 2013c; MoH, 2013d). Although Amman has the largest number of primary healthcare centres (i.e. n= 63) (MoH, 2013), the findings from this study cannot be generalised to all primary

healthcare centres in Jordan because the way in which these services are delivered in other regions may differ. For example, in Amman, the large number of hospitals, high technological capacity, quality of services, as well as much of the country's medical expertise, is unlikely to be matched in other regions of Jordan. As this study limited data collection to Amman, the findings may not be generalised to other urban/rural regions of Jordan. On the other hand, this study surveyed the only cardiac institute (in Amman) in the country. This institute provides comprehensive cardiac services to all sectors of the Jordanian population (Jordanian Royal Medical Service, 2013).

9.1.3 Sampling strategy

Selection bias may compromise the generalizability of the findings, depending on how representative the sample is of the defined population. All the public hospitals (n=3), RMS hospitals (n=2) and the cardiac institute located in Amman were selected for the study, providing a representative sample from the public and RMS healthcare sectors in Amman. The selection of private hospitals and primary healthcare centres was undertaken using cluster random sampling (i.e. computer random sampling) to increase the representativeness of sample from the Jordanian healthcare system to match the target population. This study randomly selected 19 out of the 63 primary healthcare centres and six (i.e. two large hospitals and four small hospitals) out of the 31 private hospitals within Amman. Given the different sizes of the private hospitals, probability proportional sampling (Levy and Lemeshow, 2008) was undertaken prior to cluster random sampling for the private hospitals. These hospitals were divided into large or small hospitals according to the number of hospital beds to enhance the representativeness of the sample from this sector. The researcher undertook cluster random sampling because it is an effective, cost-effective method to divide a population

into clusters from which random sample clusters are selected as recommended by Abramson and Abramson, (2008). This enables accessing large samples at a small cost using a random sampling approach (Moule and Goodman, 2009). One problem with cluster random sampling is, however, the degree of similarity between people in each cluster (Abramson and Abramson, 2008), thus over- or under-representing certain characteristics of the total population, which can skew the study's findings. The researcher minimised this risk by including 25 clusters (i.e. six hospitals from the private sector and 19 primary healthcare centres from the public sector) to obtain a representative sample that matched the target population.

The sample size for the current study was calculated with reference to previous research conducted in Jordan in which the number of required participants was calculated taking into account the potential number of non-response participants (Kirkwood and Sterne, 2003).

9.1.4 Study sample

The study recruited a large sample (n=1,726) of patients (n=592), doctors (n=458), and RNs (n=676) from multiple clinical settings including hospitals (i.e. acute and surgical wards) and community settings (i.e. primary healthcare centres and out-patient departments) of the main healthcare sectors, i.e. public, private and RMS, which increased the representativeness of the sample to match the target population in Amman. The selection of the participants from each general hospital and primary healthcare centre was achieved by using quota sampling for each sample group from each healthcare sector i.e. public, private and RMS. LoBiondo-Wood and Haber (2010) have suggested that this sampling technique addresses the problem of over-

representation or under-representation of some parts of a population in a sample and minimises any systematic bias.

9.1.4.1 Response rate

The present study achieved a good response of 72%, meaning that there was a risk of non-response bias (28.1%). The non-response level in this study might have been due to a lack of interest or unfamiliarity with the topic under investigation, dislike of completing questionnaires, lack of time or illness. Non-response may be a major threat to the external validity of a study (Barriball and While, 1999) as some of participants' characteristics are likely to differ from those who do not respond. Thus, it is possible that those participants who completed the questionnaires held different views about the role legitimacy of RNs in health promotion relating to CVD than the non-participants.

It is useful to reflect on the different types of non-response (i.e. coverage, unit and item) within the current study. The researcher minimised the non-coverage bias by making sure that the sampling frame of the current study included all relevant units of the target population by recruiting participants from all the healthcare sectors in Amman, Jordan. Thus, at the organisational level, the study included hospitals from all the healthcare sectors (i.e. public, private and RMS) in Jordan in which all the target hospitals have agreed to take place in the study.

In terms of unit non-response, Barriball and While (1999) have argued, that the major components of the unit non-response are refusal of participants to cooperate in the research and non-contact with participants. Refusals were minimised through conveying the importance of the study (e.g. to reduce the burden of CVD in Jordan) to the participants; face to face contact with patients; and following up with health professionals (e.g. RNs and doctors) who worked at different times (e.g. on night

shifts). The study achieved a good unit response rate within each healthcare sector (i.e. private sector, 78.5%; public sector, 77.4%; RMS, 62%), which minimised non-response bias and increased the representativeness of the sample from each healthcare sector.

Item non-response was minimised for this study by assuring participants of their anonymity which increased the chance of them answering all the questionnaire items and avoiding any social desirability bias, particularly for the items relating to personal health behaviours (e.g. smoking and body weight size). Overall, the current study reported a high response rate (over 90%) across all the items. The lowest item response rate was among the RNs sample group for the items relating to the nursing training in health promotion (nursing training in smoking cessation 75%; nursing training in exercise, 76%; and nursing training in weight management, 76%).

9.1.4.2 Registered Nurses

The current study had a high response rate from the RNs sample (n=676, RR=85.3%). At the healthcare sector level, the research intentionally aimed to recruit a similar proportion of RNs from each healthcare sector to enable a comparison of the views of the RNs regarding their role legitimacy in health promotion relating to CVD across all healthcare sectors (i.e. public sector 37.6%; RMS 35.2%; private sector 35.2%). This over-represented the public and RMS healthcare sectors and under-represented the private sector given that the current proportions of the Jordanian RNs population across the healthcare sectors are: 28% (public sector); 15% (RMS); and 56% (private sector) (MoH, 2013f).

The RNs' demographic data indicate that the majority of the RNs (97.5%) in the current study were Jordanian with 53.1% being female. This is representative of the RNs

population, as 95.9% of the RNs workforce in Jordan is Jordanian and 61.7% are female (JNC, 2009). Regarding their professional qualifications, the majority of the RN participants held a BSN degree (96.7%), while a minority (3.2%) held a higher degree. This reflects the Jordanian RNs study population, as all nurses are required to have a BSN degree to practice, and those with a postgraduate degree (MSc and/or PhD) are more likely to follow an academic career pathway (Zahran, 2010).

9.1.4.3 Doctors

The doctors' response rate was below target (n=458, RR=57.7%). Some efforts should be made in future research (e.g. attending doctors' meeting) to increase the representation of doctors, as non-response bias reduces external validity, i.e., the views of the doctor participants may not represent those of all doctors in the Amman/Jordan population. This low response rate among the doctor participants has occurred previously in the Middle East and it is not unique to Jordan as previous research has also reported low response rates (e.g. Shuriquie, 2006; Aldossary et al, 2012). Notably, the proportion of the doctor participants from the public sector (46.7%) was higher compared with other healthcare sectors (i.e. private sector, 27.1%; and RMS, 26.2%). It is possible that the doctors from the public sector have a greater interest in the RNs' role in health promotion relating to CVD, to reduce the burden of this disease on the public health system.

9.1.4.4 Patients

The response rate of the patient sample was good (n=592, 74.8%), with good representation across the four age groups (i.e. 20-29 years: 23%; 30-39 years: 26%; 40-49 years: 27%; and 50+ years, 24%), indicating that the views of one or two age groups do not dominate the findings. In terms of gender, the researcher also aimed to recruit a

representative sample of male patients (57.4%) and female patients (42.6%) for this study. The demographic data of the study patients might be different to the patient population as there are no available data sources. However, when comparing the patients' data to adult male residents in Jordan, the male patients are over-represented (51.5% male) (Department of Statistics, 2013a). This gender difference is not large with female patients possibly being less willing to participate in surveys, and male patients more willing to express their views in Jordan. The patient sample who have completed high school education (36.6%) or college/university (41.9%) were over-representative compared to the general population (aged 15 years and over) in 2012 (i.e. high school 17.4% completed; college or university and above 23.3%) (Department of Statistics, 2013c). Nevertheless, the percentage of the illiterate patients (3.4%) was under-representative compared with the general population (illiterate 6.7%) (Department of Statistics, 2013c). It is worth noting that these statistics data for the general population were aged 15 years and over while the patient sample were aged 20 years and over which make the comparison difficult.

9.1.5 Study instrument

The study used self-report questionnaires (i.e. Arabic version) to collect data from different sample groups (i.e. RNs, doctors and patients). The same structured self-report questionnaire (i.e. generic questionnaire) was developed for each sample group (i.e. RNs, doctors and patients). For the RNs questionnaire, an additional section was added to assess the levels of CVD knowledge and three items to ask if they have received training in health promotion (See Appendix 2). Fowler (2002) has suggested that the best way to select the method of data collection in research depends upon the type of populations, for example, healthcare professionals are more likely to cooperate with

self-report questionnaires because they are more likely to experience heavy workloads in clinical settings. On the other hand, the self-report questionnaire was a useful method to collect data from the patients as it allows them to complete the questionnaires privately, in their own time.

The use of self-report questionnaires encouraged the RNs, doctors and patients to respond more truthfully regarding less socially acceptable responses (McColl et al., 2001; Bowling, 2005) including personal health behaviours (e.g. smoking and body weight size) which were more likely to be under-estimated if other methods were used, including face-to-face interviews. In addition, it also minimised the risk of acquiescence bias (”yea-saying”). One disadvantage with self-report questionnaires, however, is that the researcher has no control over who completes the questionnaire, for example, the participants may have consulted with others (McColl et al., 2001).

9.1.5.1 Validity of the study instrument

Validity is considered high when an instrument, for example, accurately measures its intended construct/purpose (Gerrish and Lacey, 2006) in this case, the perceived role legitimacy of the RN in health promotion relating to CVD. To increase internal validity, the content and response format of the study instruments drew upon existing instruments (i.e., Sechrist et al., 1987; Fitzpatrick et al., 1997; McDowell et al., 1997; Greenleaf et al., 2004; Shuriquie, 2006; John et al., 2009; Aldossary 2010). Three scales were used in this study with no changes i.e. general health promotion scale (responsibilities, perceptions and constraints sub-scales, Aldossary 2010); health promotion and CVD scale (smoking cessation, weight management and physical activity sub-scales, Aldossary, 2010); and personal health behaviour data (Stages of Change relating to physical exercise, exercise barriers, body weight size and smoking

habits) (Sechrist et al., 1987; McDowell et al., 1997; Greenleaf et al., 2004). Some changes were made to two scales, i.e. knowledge of CVD (John et al., 2009); and roles of different healthcare personnel (Fitzpatrick et al., 1997; Shuriquie, 2006). The items were carefully selected and modified to meet the study aim and objectives. For example, the "King's Nurse Performance Scale" (Fitzpatrick et al., 1997) focuses on the physical, psychosocial and communication, professional and management domain of nursing practice. For this study, only nine items related to psychosocial and communication aspects were taken from this scale as they were related to the nursing role in health promotion. Notably, some of these instruments (Fitzpatrick et al., 1997; Shuriquie, 2006; Aldossary, 2010) have been widely used, particularly in the Middle East.

- **Face Validity**

The questionnaires developed for this study demonstrated good face validity (e.g. as agreed by an expert panel), thus ensuring that the questionnaire items clearly reflected the concept which the researcher intended to measure (i.e. perceived role legitimacy of RNs in health promotion relating to CVD) (Bowling, 2002).

- **Content Validity**

The content validity of the questionnaires was informed by a critical evaluation of published studies in the literature review regarding the RNs' role in health promotion relating to CVD. For example, general health promotion and health promotion regarding CVD scales (e.g. Aldossary 2010) were selected from previous instruments which measured the same concepts in Saudi Arabia. The literature review has acknowledged that personal health behaviours of RNs, together with those of doctors, can play a key role in the delivery of health promotion in practice (Gomm et al., 2002; Hodgetts et al., 2004; Hall et al., 2005; Shishani et al., 2011). Thus, three scales (Stages of Change

relating to physical exercise, McDowell et al., 1997; exercise barriers, Sechrist et al., 1987; and body weight size, Greenleaf et al., 2004) and two short questions regarding smoking status of the participants (i.e. RNs, doctors and patients) were used for this study to explore the impact of personal health behaviours and body weight upon views regarding RNs' role in health promotion relating to CVD. The content validity of the study instrument was also evaluated by an expert panel (n=4) who assessed how well the content of the questionnaire accurately measures the domain they were intended to measure.

- **Construct Validity**

The construct validity of the current study instrument was not tested, for example, by correlating scores from the scales used in this study with other instruments measuring similar, or dissimilar, traits. However, the literature search informed the choice of an appropriate conceptual framework to underpin the development of the study instruments. Shaw et al.'s (1978) conceptual framework interpreted by Machin and Stevenson (1997) was used to inform the development of the study instrument as LoBiondo-Wood and Haber (2010) have suggested, construct validity is related to the extent to which a tool measures a theoretical construct. Machin and Stevenson (1997) have suggested that the role legitimacy of RNs is concerned with the appropriateness and the scope of professional practice which can be considered from both "formalised" and "non-formalised" dimensions. This conceptual framework informed the development of the study instruments by focusing on the non-formalised dimension of the RNs' role legitimacy in health promotion relating to CVD. The four domains which have been used from the conceptual framework were the RNs' knowledge of CVD scales (John et al., 2009); the scope of professional nurse practice including the RNs' role legitimacy in general health promotion and in health promotion relating to CVD

scales (Aldossary, 2010); and the identification of the roles of different healthcare personnel in health promotion by using Fitzpatrick et al., (1997) and Shuriquie's (2006) scales. Additionally, factor analysis was not undertaken which is a potential limitation. However, two scales (i.e. psychosocial domain of "King's Performance Scale"; and personal health behaviour data scale) within the study instrument have reported good construct validity, for example, using factor analysis in previous studies (Sechrist et al., 1987; Fitzpatrick et al., 1997) with three scale (i.e. CVD knowledge scale; the "King's Performance Scale"; the Figure Rating Scale) also reporting convergent validity (Fitzpatrick et al., 1997; Cardinal et al., 2006; John et al., 2009). It is recognised that future testing of the instrument scales would further enhance confidence in the study finding.

- **Pilot Study**

The researcher undertook a pilot study with a sample of Jordanian RNs (n=25) to assess the feasibility of the study instruments. The pilot sample recommended using the Arabic language for the questionnaire. Additionally, the Arabic language is the formal language in Jordan. The researcher, therefore, translated the study instrument into the Arabic language. The instrument which had been developed in non-Arabic countries needed to be accurately translated and validated to be culturally sensitive to the target population (Cha et al., 2007). Two bilingual Jordanian professionals translated the study instrument from English to Arabic using the backward translation procedure as recommended by Brislin (1970). The Arabic version of the study instrument was then distributed to a convenience sample of patients with different educational backgrounds and different ages (e.g. 29 years and under, 30-49 years, 50 years and over) to assess the clarity of the items. The patients stated that the instrument items were clear.

9.1.5.2 Reliability of the study instrument

The researcher assessed the internal consistency of the study instrument using Cronbach's alpha to measure how closely each scale item was related as a group. Overall, the study instrument reported good internal consistency with four scales (i.e. general health promotion scale; the health promotion relating to CVD scale; the roles of different healthcare personnel; personal health behaviour data) reporting Cronbach's alpha between 0.70 and 0.90. The CVD knowledge scale reported lower internal consistency (Cronbach's alpha =0.560).

The researcher also assessed the stability of the study instrument using the test-retest technique. The researcher used both Cohen's Kappa Coefficient and a percentage calculation to assess the agreement between the first test and second test for the items (Viera and Garrett, 2005). Intraclass correlation coefficient test was not used because this test measures the agreement only between continuous data. Using Kappa Coefficient, the majority of the items (72%) had good agreement. However, just over one quarter of the items (28%) had fair agreement.

Across the five scales, the roles of different healthcare personnel scale demonstrated the lower level of agreement, whereas both the general health promotion and personal health behaviours scales showed the higher level of agreement between the test and retest. The test-retest results for each scale was as follows: the RNs' knowledge of CVD scale showed a high-level of agreement (0.81-1) for the majority of the items (62%) with 30% of the items reporting fair to moderate agreement (0.21-0.60). The general health promotion scale showed moderate to substantial agreement (0.41-0.80) for the majority of the items (68%) with 26% of the items reporting slight to fair agreement (0.0-0.40). The health promotion and CVD scale demonstrated moderate to substantial

agreement (0.41-0.80) for 73% of the items with 26% reporting slight agreement (0-0.20). The roles of different healthcare personnel scale showed substantial to perfect agreement (0.61-1.00) for 40% of the items with 25% reporting moderate agreement (0.21-0.40), 25% reporting slight to fair agreement (0.00-0.40) and 10% reporting no agreement. The personal health behaviour data scale showed substantial to perfect agreement (0.61-1.00) in 58% of the items with 29% demonstrating moderate agreement (0.41-0.60) and 13% fair agreement (0.21-40).

9.1.5.3 Sensitivity of the study instrument

Across the three sample groups (i.e. RNs, doctors and patients), the distribution of scores was normally distributed for four scales including the general health promotion scale (i.e. responsibilities, perceptions and constraints sub-scales), the health promotion relating to CVD scale, and the roles of different healthcare personnel and the personal health behaviour data scale (Stages of Change relating to physical exercise, exercise barriers and body weight size), reflecting a good sensitivity for these four scales. Nevertheless, the RNs' scores on the CVD knowledge scale was not normally distributed (i.e. a negative skewed distribution) with a mean score of 13.02 (SD=2.07), suggesting a ceiling effect. Therefore, the scale items used did not accurately distinguish between basic and expert knowledge of CVD among the RNs.

9.1.6 Data collection procedure

Gaining authorised access to survey the RNs, the doctors and the patients at the hospitals and primary healthcare centres included within this study proved challenging for the researcher given the large complex healthcare system in Jordan. Additionally, ethical considerations including confidentiality, privacy and anonymity were ensured for this study. Additionally, accessing the RMS hospitals was a major challenge as the

researcher was not a staff member of the RMS. The researcher invited the eligible participants to take part in the study and those who agreed were asked to complete the questionnaire (e.g. voluntary recruitment).

Given the large target sample size, two additional data collectors were selected by the researcher to assist with data collection procedures. Experience, professionalism and good communication skills were considered when recruiting data collectors (Polit and Beck, 2008). The researcher delivered one day of training for the data collectors, which focused on data collection protocols and ensuring consistency in the distribution and collection of questionnaires. Each data collector's first day of data collection was monitored, and frequent contacts were kept with them, by the researcher, throughout the data collection process. The data collectors followed the data collection protocol to ensure that there was consistency in the distribution and collection of the questionnaires. The research recruited male data collectors which might have affected the recruitment of the female participants. Nevertheless, the ideal would be recruiting male and female data collectors for gender sensitivity.

9.1.7 Data analysis

The distribution of data was not normally distributed for the RNs' knowledge scale, whereas the distribution was normal for four scales of the study instrument (i.e. the general health promotion scale; health promotion relating to CVD scale; roles of different healthcare personnel scale; and personal health behaviour data scale). The appropriate parametric and non-parametric statistical tests were used for nominal (categorical), ordinal and continuous variables (Kirkwood and Sterne, 2003). The Chi-square test was used to explore the relationships between two categorical variables (e.g. RNs' gender and healthcare sectors). The parametric t-test was used to compare

between a continuous variable (e.g. general health promotion score) and a categorical variable with two groups (e.g. gender). The parametric one-way ANOVA test and the non-parametric Kruskal-Wallis test (the RNs' knowledge of CVD score) were utilised to measure the difference between one categorical variable with more than two groups (e.g. healthcare sectors) and one continuous variable (e.g. disease knowledge). Multivariate analysis was also undertaken on the RNs data set to assess which variables influenced the RNs' perception of their role legitimacy in general health promotion and relating to CVD beyond the bivariate analysis.

The risk of Type I (false positive) and Type II (false negative) errors was also avoided for this study. For example, Type I error was avoided by setting the significance level at less than 5% ($p<0.05$). Type II error (false negative) occurs when the study fails to detect any real statistically significant differences which usually happens if the sample size is small (LoBiondo-Wood and Haber, 2010). This error was avoided by increasing the statistical power and recruiting a large sample size (n=1726). Since the CVD knowledge scale was non-normally distributed (i.e. a negative skewed distribution), the researcher divided the total scores into three levels (i.e. high, adequate and low) which enabled to measure the association of the RNs' knowledge of CVD with other variables. The limitation of this is that it can decrease the statistical power. However, the sample size was large enough to detect any significant changes.

9.2 Study recommendations for policy, practice, education and future research

This section presents recommendations for policy, practice and education which have been developed based on the study findings, and discuss recommendations for future research.

9.2.1 Recommendations for policy, practice, education

The findings from this study suggest that the role of RNs in health promotion regarding CVD is limited in practice. The professional bodies (i.e. JNC & JNMC) need to formally recognise the role of RNs in general health promotion and specifically relating to CVD in practice, by developing clear role objectives (i.e. job description) and guidelines for practice within community and hospital settings. Additionally, healthcare employers in Jordan (i.e. the Ministry of Health, the Private Hospitals and the RMS) need to publicly support the RNs' role in health promotion regarding CVD in practice. Furthermore, this study revealed that the RNs working in Jordan reported having limited time to undertake general health promotion initiatives. It is, therefore, recommended that healthcare policy makers review the roles of RNs to ensure that they have the capacity to provide health promotion counselling, information and activities relating to CVD to decrease the prevalence of CVD in Jordan, and reduce the economic burden on the healthcare system.

Additionally, this study revealed that the Jordanian RNs working in different clinical settings (i.e. medical, surgical, primary healthcare centres and out-patient clinics) reported receiving limited health promotion training regarding CVD. Healthcare employers need to formally provide the Jordanian RNs in practice with post-qualifications/training in general health promotion and relating to CVD in particular (i.e. promoting smoking cessation, weight management and physical activity) in different clinical settings (e.g. primary healthcare and hospitals).

This study found that the Jordanian RNs with unhealthy personal behaviours (e.g. smoking and lack of physical exercise) were being less interested in promoting healthy behaviours in their patients with CVD compared to those with healthy personal

behaviours. Service providers and employers in Jordan need to address factors relating to the unhealthy personal behaviours of RNs. Additionally, policy makers need to incorporate health promotion training into the undergraduate nursing education curricula, so that these unhealthy behaviours of nursing students are addressed before RNs enter the nursing workforce.

9.2.2 Recommendations for future research

- Further validation and testing of the explanatory model (Figure 3) is also needed in other locations outside Amman (e.g. urban/rural regions of Jordan), as the present study found that there was a significant relationship between the RNs' role in CVD health promotion and personal factors, including the RNs' perceptions of general health promotion, their role in general health promotion and their personal health behaviours. This relationship requires further testing to determine the robustness of these findings.

- Additional exploratory qualitative research is needed to further explain the study findings, for example, to discover 'why' patients and doctors in Jordan hold negative views about the RNs' role in general health promotion and relating to CVD, and explore how to implement better health promotion practice for CVD. This could be conducted using focus groups and/or in-depth interviews with doctors, RNs and patients.

- It is also important for future research to consider the views of future RNs, i.e. the nursing students' views regarding the role of RNs in health promotion in CVD, and address student nurses' unhealthy personal behaviours before they go into practice as registrants. This could be conducted using self-report questionnaires.

- Further research is also needed to measure the RNs' skills in general health promotion and relating to CVD, using, for example, non-participant observation.

- This study suggested that communication problems between RNs and patients were a barrier to the RNs' role in health promotion relating to CVD. Thus, further research is needed to explore the content of communication between RNs and patients with heart disease. This could be conducted using semi-structured interviews and non-participant observation.

9.3 Conclusion

The purpose of this study was to explore the RNs' role legitimacy in health promotion relating to CVD in Jordan. The current study suggests that the RNs' role legitimacy in health promotion relating to CVD is limited. The RNs indicated positive views regarding their role legitimacy in general health promotion and relating to CVD and demonstrated a high CVD knowledge. The doctors and patients, however, did not perceive that the RNs had role legitimacy in general health promotion and relating to CVD. Across the healthcare sectors, the RNs' role legitimacy in general health promotion and relating to CVD was not consistent, as indicated by the more positive views of the participants recruited from the public sector compared to those recruited from the private sector. Professional bodies and healthcare employers in Jordan need to formally recognise and support the RNs' role legitimacy in general health promotion and specifically relating to CVD in practice. There is also a need to formally provide the Jordanian RNs in practice with post-qualifications/training in general health promotion and relating to CVD in particular in different clinical settings (e.g. primary healthcare and hospitals).

This exploratory study has added to the research knowledge base. The current study is the first of its kind to explore the role legitimacy of RNs in health promotion relating to CVD in Jordan. It has proposed an explanatory model of the factors influencing the RNs' role legitimacy in health promotion relating to CVD in Jordan which needs further testing to determine the robustness of the findings.

The current study highlighted some areas for further research. An exploratory qualitative research is required to explore further the negative views of patients and doctors in Jordan regarding the RNs' role in general health promotion and relating to CVD, and explore how to implement better health promotion practice for CVD. It would be valuable to conduct non-participant observation to measure the RNs' skills in general health promotion and relating to CVD. A cross-sectional survey is needed to examine the views of the nursing students' views regarding the role of RNs in health promotion relating to CVD as nursing students will be the future RN workforce.

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Appendix 1

Assessment of RCT studies

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
1.	Allison et al. (2000) USA	• RCT • The emergency room at St. Mary's hospital in Rochester, Minnesota (one site) • Sample: adults diagnosed with unstable angina; intervention group (n=158, mean age 57± 13 years) and control group (n=168, mean age 59±14 years); male and female. • **Intervention**: one hour appointment in the cardiovascular health clinic 6 to 10 days after discharge from the hospital or chest pain unit (to develop a risk factor modification plan). A second appointment of one hour was after 25 to 35 days. Additional follow-up was provided as clinically. Another one hour was provided 24-28 weeks after discharge.	At baseline, T1=6 months • Blood lipids (total and high density lipoprotein cholesterol and triglycerides) and blood glucose (finger stick and analyzed on a Cholestech L.D.X. portable analyzer). • Exercise (a treadmill test) • Smoking, exercise and dietary habits (a simple questionnaire). • Smoking status (a test for expired carbon monoxide). • Psychosocial evaluation (The Symptom Checklist and the Social Isolation Questionnaire (SCL-90-R)). • Waist-hip ratio	• The intervention group reported significantly better response in triglycerides than the control group ($p<0.0001$) • The intervention group reported more regular exercise than the control group at 6 months ($p=0.0491$). • The intervention group reported more weight loss than the control group ($p=0.0071$). • There was an improvement in smoking status without significant differences between the intervention and control groups.	Moderate Strengths • Single blinded • Adequate sample size • Attrition reported • Comparing groups at baseline and follow-up x1 • No confounders reported • Clinical data reported Limitations • One study site • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
2.	Anderson et al. (2006) Australia	• RCT study • Six selected postcodes from south-east Queensland (6 sites) • Sample: women with high risk of CVD aged between 45 and 65 years intervention group (n=47), control group (n=66). • **Intervention**: 40 minutes consultation provided (personally) by a nurse, outlining the 12-week programme and included health education and goal setting sessions achieved over 3 months. Women then received a second consultation at the end of the 12-weeks	At baseline, T1= 12 weeks • Researcher developed questionnaires (socio-demographic factors, smoking status and adherence of physical activities) • Exercise and activity levels (The Woods and Mitchell, Seattle Mid-life Study, University of Washington) • Body Mass Index (BMI) • The Waist Hip Ratio (WHR) measured by dividing the circumference of the waist by the circumference of the hip • BP	• In the intervention group, the aerobic exercise was increased ($p< 0.05$) and the smoking rate was decreased ($p= 0.02$). • There were significant improvements in the intervention group regarding the WHR ($p=0.03$), BMI ($p=0.02$), diastolic BP ($p=0.02$)) and the systolic BP ($p=0.08$ not significant). • A high-level of adherence to the intervention regimen was reported (No p-value reported). • A high level of adherence to the nutrition was reported in the intervention group (no p-value reported).	Strong Strengths • Multiple sites • A moderate sample size • Attrition reported • Comparing groups at baseline and follow-up x1 • No confounders reported • Test-retest of questionnaire showed high reliability (Cronbach's alpha 0.85) • Clinical data reported Limitations • Blinding not reported • Response rate 55.4% • Only female • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
3.	Artinian et al. (2007) USA	• RCT • The east side of Detroit community • Sample: African Americans diagnosed with hypertension; intervention group (n=194, mean age 59.1±13.0 years) and control group (n=193 mean age 60.2±12.3), male and female • **Intervention** (telemonitoring): the nurses delivered the BP monitor and TM link device (device that links BP monitor to the telephone) to the participants' home and taught the participants how to self-monitor BP. Later, the nurses telephoned each participant to provide feedback in relation to the target goals and provide telecounselling about lifestyle modification and medication; telecounselling were made weekly between baseline and 3-month (average 16.2 min) follow-up, monthly between 4 and 6 months (average 9.6 min) and then once at 8 months (average 8.7 min).	At baseline, T1=3 months, T2=6 months, T3=12 months • BP was measured using an electronic monitor (Omron HEM-737 Intellisense, Omron Healthcare, Inc., Vernon Hills, IL)	• Overall, the intervention group had more reduction in SBP (13.0 mm Hg) than the control group (p= 0.04) from baseline to T3. • At 3-month, BP values were lower in the intervention group compared with the control group (SBP: p=0.001; DBP: p=0.05). • The baseline-adjusted between-group difference in SBP from baseline to T3 was 12.2 mm Hg (SE=1.8; t=6.7; p<0.0001). For DBP, the intervention group had lower readings than in the control group (p= 0.02). • At T1, DBP control prevalence was also statistically significantly higher in the intervention group than in the control group (64% vs. 53%, respectively; p=0.04)	Strong Strengths • Single blinded • A community site • Adequate sample size • Attrition reported • Comparing groups at baseline and follow-up x3 • No confounders reported • Clinical data reported Limitations • Only African Americans

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
4.	Bosworth et al. (2005) USA	• RCT study • A primary care clinic (one site) • Sample: adults diagnosed with hypertension; intervention group (n=294 mean age 63 years), control group (n=294, mean age 64 years). • **Intervention**: the nurse contacted the adults by telephone every 2 months for 24 months (tailored and standard information) with an average call 3.7 minutes.	At baseline, T1= 6 months, T2=24 months • Perceived risk/knowledge about BP control assessed at baseline (developed questionnaire) • Memory: self-report • Health literacy: measured by REALM each 2 months through the phone • Medication adherence (Morisky Self-report Medication-Taking Scale).	• Only T1 data reported • The intervention group had significantly higher self-confidence of hypertension management compared to the control group (p=0.007). • 46% of the intervention group were adherent at follow-up while 34% of the control group were adherent at follow-up (p=0.08, not significant).	Moderate Strengths: • Adequate sample size • Attrition reported • A high response rate (95%) for 6 months follow-up data (low attrition rate) • Comparing groups at baseline and follow-up x2 • No confounders reported • Validated questionnaires. Limitations: • Blinding not reported • One study site • 98% male • Using self-report questionnaires • No clinical data reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
5.	Bosworth et al. (2009) USA	• RCT study • A primary care clinic (one site) • Sample: adults diagnosed with hypertension; mean age: 63 years; hypertension reminder group (n=143), provider decision support intervention group (n=151), tailored behavioural intervention group (n=144) and combined intervention group (n=150), male 98% • **Intervention**: tailored adults' behavioural intervention: the nurse telephoned adults within 1 week of randomization and then every 2 months for 24 months. At each call, the nurse provided health education about memory, health literacy aids, social support, hypertension knowledge, patient/provider communication, medication refill reminders, appointment compliance, health behaviours (diet, exercise, smoking alcohol use) and medication side effects. Average call 3.2 minutes	At baseline, T1= 6 months, T2=12 months, T3=18 months, T4=24 months • BP control: devices (IVAC, San Diego, CA), models 4200s and 4410s/4415s.	• In the intervention group, an improvement in BP control was reported with no statistical significant (p=0.08). • SBP improved in the three intervention groups overtime with no significant difference reporting between both intervention and reminder control groups (no p-value reported). • Within the behavioural intervention groups (adults intervention and combined arm), BP control improved from 40.1% to 54.4% over 2-years (p=0.03). • BP control improved from 38.2% to 43.9% (p=0.38, not significant) in both reminder intervention and provider reminder).	Moderate Strengths • Double blinded • Adequate sample size • A high response rate (97%) • Comparing groups at baseline and follow-up x4 • Attrition reported • No confounders reported • Clinical data reported Limitations • One study site • 98% male

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
6.	Brennan et al. (2010) USA	• RCT • A single care agency (2 sites) • Sample: adults diagnosed with a cardiac disease; mean age 64 years (28-93 years), intervention group (n=146), control group (n=136); male and female • **Intervention**: nurses made home visits face to face ranging from 1-9 visits tailored to specific patients' needs and website source of information; nurses provided nursing care with selected technology tools located on the Heart Care website where a clinical information system that both nurses and patients could have accessed on it.	T1=1 week, T2=4 weeks, T3=8 weeks, T4=12 weeks, T5=24 weeks • Clinical status: the Short Form-12 (SF-12) • Self-management: the Self-care Heart Failure Index (SCHFI) • Quality of life: the Multidimensional Index for Life Quality Questionnaire for Cardiovascular Disease (MILQ) • Satisfaction with nursing care: a self-report questionnaire	• There were no significant differences between the two groups at any time point for the outcome variable of satisfaction with nursing care • The fixed-point exploration showed no effect of the intervention group on quality of life or self-management at any time point	Moderate Strengths • Two sites • Adequate sample size • Attrition reported • Comparing groups at baseline and follow -up x5 • No confounders • Validated questionnaires used Limitations • Blinding not reported • Self-report questionnaires • No clinical data reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
7.	Burton and Gibbon (2005) UK	• RCT study • Two district general hospitals in the north-west of England (2 sites) • Sample: adults diagnosed with a stroke, intervention group (n=87 mean age 75.8 years), control group (n=89 mean age 74.7 years); male and female. • **Intervention**: adults received a follow-up visit from a nurse after two days of discharge. A complete assessment of the potential for recovery was performed to guide the planning of follow-up and assessment. Three telephone calls over two months were undertaken.	At baseline, T1= 3months, T2= 12 months • Patient dependency using the Barthel Index (Mahoney & Barthel 1965) • Patient perceptions of general health (including emotional health, social isolation, pain, mobility, energy and sleep) using the Nottingham Health Profile (Hunt et al. 1980) • Patient depression using the Beck Depression Inventory (Beck et al. 1996) • Performance of everyday activities by patients using the Frenchay Activities Index (Holbrook & Skilbeck 1983) • Perceptions of strain in carers using the Caregiver Strain Index (Robinson 1983).	• The intervention group reported statistically significantly lower levels of emotional distress ($p<0.001$) and social isolation ($p<0.001$) • Both groups reported improvements in perceived general health by T2, but the amount of improvement was statistically significantly higher in the intervention group ($p<0.001$) • There were no statistically significant differences between the two groups regarding depression	Strong Strengths • Single blinded • Multiple sites • A moderate sample size • Attrition reported • Comparing groups at baseline and follow -up x2 • No confounders • Validated questionnaires used Limitations • Missing data reported • Self-report questionnaires • No clinical data reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
8.	Carroll and Rankin (2006) USA	• RCT study • Three urban medical centres (3 sites) • Sample: adults diagnosed with MI, mean age over 65 years; peer advisor group (n=46), APN group (n=43) and control group (n=43), male and female. • **Intervention**: three nurses provided health promotion including verbal persuasion, additional patient education and strategies to manage physiologic arousal (telephone call once a week for 12 weeks after discharge).	At baseline, T1= at 12 weeks • Self-efficacy: the Jenkins Self-Efficacy Scales and the Duke Activity Status Index Self-Efficacy Scale (DASI-SE). • Health status: The Medical Outcomes Survey (SF-36)	• Mean self-efficacy scores for the recovery behaviours were similar amongst the 3 groups at baseline, and increased over 12-week period for all groups (no p-value reported) • Mental and physical scores in the three groups were an increased, but the largest change was in the intervention group, from baseline to T1, with no statistically significant (no p-value). • There was an increase of lengths of stay in the control group ($p<0.054$)	Moderate Strengths: • Three sites • Moderate sample size • Comparing groups at baseline and follow-up x1 • Validity and reliability of questionnaires reported Limitations • Blinding not reported • 70% female • High attrition rate • Confounders reported • Self-report questionnaires • No clinical data reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
9.	Cossette et al. (2012) Canada	• RCT study • A CCU or medical ward of a specialised cardiac centre (one site) • Sample: patients with acute cardiac syndrome, mean age 59.4 years, intervention group (n=121), control group (n=121), male and female. **Intervention**: nurses provided face to face health education about patients' management of symptoms and physical activity, their understanding of the illness and their concerns and worries. Then they gave one telephone call about the ability in management of the disease and risk factors modification at 3 days post-discharge. Finally, a face to face or a telephone call to address risk factors and lifestyle modifications was performed 10 days post-discharge.	At baseline, T1= at discharge, T2= 6 weeks • Perceived control (Revised Illness Perception Questionnaire) • Perceived support by family (Family Care Climate Questionnaire- Patient version) • Anxiety (the Strait-Trait Anxiety Inventor) • Medication adherence (Reported Medication-Taking scale) • Physical activity (Do You Have a Healthy Heart? scale) • Health diet (Are You Eating Healthy? Scale)	• The intervention group reported higher enrolment in the rehabilitation programme than the control group ($p<0.001$). • The intervention group reported significant improvement in the personal control of disease compared to the control group ($p<0.0241$).	Moderate Strengths: • Single blinded • Moderate sample size • Attrition was reported • Comparing groups at baseline and follow-up x2 • Validity and reliability of questionnaires reported Limitations • One site • Confounders reported • Self-report questionnaires • No clinical data reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
10.	Dalal et al. (2007) UK	• RCT study • Two primary care trusts (2 sites) • Sample: adults diagnosed with MI, mean age 62.75 years randomly allocated to home (n=60), preferred home (n=72); randomly allocated to hospital (n=44) preferred hospital (n=54), male and female. • **Intervention** (home-based rehabilitation): a nurse provided the Heart Manual during the hospital admission. A nurse visited patients at home in the first week after discharge with following up telephone calls over six weeks, the telephone call was made in 2, 3, 4, and 6 weeks. The duration of telephone was 5-10 minutes.	At baseline, T1= 3, months T2= 9 months Primary outcomes: • Psychological wellbeing: the Hospital Anxiety Depression scale • Quality of life as measured by the three domains (emotional, physical, and social that combine to give a global score) of the MacNew questionnaire • Serum total cholesterol Secondary outcomes: • Exercise capacity (treadmill test) • BMI • BP • Smoking status (self-report questionnaire)	• A reduction in cholesterol level was reported in each group (no p-value reported). • There was an improvement in anxiety scores in the home based group (no p-value reported) • Exercise increased from T1 to T2 in both groups (p=0.23) • No differences reported in smoking rate or in body mass index, blood pressure (systolic or diastolic)	Strong Strengths • Single blinded • Two sites • A moderate sample size • Attrition reported • Comparing groups at baseline and follow-up x2 • No confounders reported • Clinical data reported • Validated questionnaire used Limitations • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
11.	Davidson et al. (2005) UK	• RCT • A rehabilitation unit in the north of England (one site) • Sample: adults diagnosed with stroke; intervention group (n=21, mean age 68.9 years); control group (n=20, mean age 63.55 years), male and female. **Intervention**: nurses instructed the adults to practise activities including sitting balance, sitting to standing, standing balance and stepping over the weekend, nurses recorded the amount of extra time each spent on the combination of activities practised by the adults (mean time = 12.73 min)	At baseline, T1= 5 weeks • The level of impairment and disability (the Motor Assessment Scale MAS) • The level of independence in activities of daily living (the Barthel Index)	• There was a difference in favour of the control group regarding activities of daily living at discharge (p=0.10)	Moderate Strengths • Single blinded • Attrition reported • Comparing groups at baseline and at follow-up x1 • No confounders reported Limitations • One study site • Small sample size • Self-report questionnaires • No clinical data reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
12.	Dougherty et al. (2004) USA	• RCT study • All medical centres across Pacific Northwest (multiple sites, n=unknown) • Sample: adults received the Implantable Cardioverter Defibrillator (ICD) or sudden cardiac arrest (SCA) intervention group (n=84 mean 63.02 years), control group (n=84 mean age 65.06 years), male and female. **Intervention**: the intervention: (1) structured information (SI) in a booklet, and (2) nursing telephone support (NTS) lasted for 15-20 minutes over 8 weeks following ICD implantation conducted by nurses.	At baseline, T1=1 month, T2=3 months • Physical Functioning The Patient Concerns Assessment (PCA), the Short Form-12 (SF-12) • ICD shocks and heart rhythm stability were assessed using interrogation reports from ICD devices. • Psychological Adjustment State-Trait Anxiety Inventory (STAI) Centre for Epidemiologic Studies Depression Scale (CES-D) • The Sudden Cardiac Arrest Knowledge Assessment (disease knowledge) • Health Care Use: Number of emergency room (ER) and hospital admissions visits for ICD firings or cardiac arrhythmias • Number of clinic visits related to functioning and maintenance of the ICD	• The intervention group reported more disease knowledge (p=0.02) and less anxiety (p=0.08) than the control group at T2. • The intervention group reported improvement in quality of life at T2 compared to the control group, but was not statistically significant (p=0.07, not significant). • At T2, both groups reported a reduced in tiredness and interrupted sleep. At T2 shortness of breath was reported more frequently by both groups (no p-value reported).	Moderate Strengths • Multiple sites • Adequate sample size • Attrition was reported • Comparing groups at baseline and follow-up x2 Limitations • Blinding not reported • Confounders reported • Setting was not reported • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
13.	Ellis et al. (2005) UK	• RCT study • A teaching hospital (one site) • Sample: adults with stroke or transient ischemic attack (TIA), intervention group (n=100 mean age 64.3 years), control group (n=105 mean age 65 years), male and female. • **Intervention**: the intervention group were offered usual care and consultation for 30 minutes (lifestyle changes and medication compliance) from a nurse who followed up with them at monthly intervals for approximately 3 months.	At baseline, T1=5 months Primary outcomes • BP, reported smoking status, blood glucose and total serum cholesterol. Secondary outcomes • The EuroQol perceived health status, Geriatric Depression Score and a stroke services satisfaction questionnaire.	• There was a reduction in systolic BP in the intervention group compared to the control group (p=0.126; not significant). • The intervention group reported more satisfaction than the control group (p<0.05).	Moderate Strengths • Single blinded • Adequate sample size • Comparing groups at baseline and follow-up x1 • Attrition was reported • No confounders reported Limitations • One study site • Study underpowered • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
14.	Gallagher et al. (2003) Australia	• RCT • Four metropolitan hospitals in Sydney, (4 sites) • Sample: women diagnosed with myocardial infarction, coronary artery bypass grafts, coronary angioplasty or stable angina; intervention group (n=93 mean age 68±12), control group (n=103, mean age 67±10). • **Intervention**: an introduction session (1 hour) 1 to 2 days before hospital discharge, followed by 4 telephone calls (each call lasted 30 minutes) at 2 to 3 days, 1, 3 and 6 weeks post-discharge; sessions included health promotion on self-management of symptoms and lifestyle changes; and strategies to improve perceptions of control, self-efficacy and social support related to their disease.	At baseline, T1= 12weeks • Psychosocial recovery including anxiety, depression and overall psychosocial adjustment to illness (the Psychosocial Adjustment to Illness Scale (PAIS)) • Anxiety and depression (the Hospital Anxiety and Depression Scale) • Perceptions of control over the cardiac illness (the Control Attitudes Scale (CAS))	• At T1, there were no significant differences between the groups for the mean scores on psychosocial adjustment • The intervention group reported significant improvements over time for mean scores on psychosocial adjustment (p=0.001), anxiety (p=0.001) and depression (p=0.001).	Moderate Strengths • Single blinded • Multiple sites • Adequate sample size • Attrition reported • Comparing groups at baseline and follow - up x1 • No confounders reported Limitations • Only female • Self-report questionnaires • No clinical data reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
15.	Goodman et al. (2008) UK	• RCT study • London (specific geographical area) (one site) • Sample: adults were waiting for cardiac bypass surgery intervention group (n=94 mean age 63.7 years), control group (n=94 mean age 65.9 years), male and female. • **Intervention 1**: monthly counselling regarding lifestyle changes and anxieties with a home nurse and manual guideline • **Intervention 2:** Monthly counselling with the cardiac homecare nurse regarding individual needs and the operation and reducing their anxieties over 3 months. Undertake a cardiac risk assessment of the outcome measures (blood pressure, body mass index, total and HDL cholesterol) and provide counselling regarding lifestyle changes in response to the risk factor assessment. The adults also provided with manual guideline regarding lifestyle changes and preparation for surgery.	At baseline, T1= 3months after discharge from hospital Primary outcomes: • Anxiety (the Hospital Anxiety and Depression Scale) • Length of hospital stays (from the hospital patient information system). • BP (an average of three readings using an automated OMRON machine). • BMI • Serum cholesterol Secondary: • Smoking status (self-report questionnaire), blood glucose (the laboratories), quality of life (using the Coronary Revascularisation Outcome Questionnaire (CROQ), a cardiac specific • Quality of life (the SF-36).	• Both groups reported a reduction in risk factors without statistically significant (no p-value reported). • Both groups reported a statistically significant improvement for BP and total cholesterol ($p<0.001$). • The mean change of anxiety score was small, with a trend in favour of the intervention group (no p-value reported). • There was an improvement in physical quality of life in the intervention group ($p=0.04$). • The intervention group reported a reduction in cardiac health utilisations ($p=0.01$).	Moderate Strengths • Double blinded • Attrition reported • Comparing groups at baseline and follow-up x1 • Validated of questionnaires reported • No confounders reported • Clinical data reported Limitations • One study site • 76.6%-86% male • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
16.	Hajek et al. (2002) UK	• RCT study • 17 hospitals across England (17 sites) • Sample: adults admitted after MI or for coronary bypass surgery (current smokers or recently stopped smoking) with age under 76 years, mean age 56 years, intervention group (n= 274) control group (n=266), male 77% and female 23%. • **Intervention**: intervention group (run by nurses) received a carbon monoxide reading to show the health benefits of quitting smoking; a booklet on smoking and cardiac recovery; a written quiz on the contents of the booklet (with discussing with the nurse).	At baseline, T1=6 weeks, T2= 12 months • Continuously abstinent (they had smoked no more than five cigarettes since recruitment and had not smoked at all in the past week) with an expired carbon monoxide reading< 10 ppm and, at 12 months, a salivary cotinine concentration < 20 ng/ml. • Point prevalence abstinence (a self-report of not having smoked at all for the past week and an expired carbon monoxide reading< 10 ppm or, for the 12 month outcome, a salivary cotinine concentration < 20 ng/ml.	• Both groups reported a reduction in smoking rate in at T1 and T2 (No p-value reported). • The both groups reported health promotion helpful with the intervention group finding it more helpful the control group (No p-value reported).	Strong Strengths • Multiple sites • Adequate sample size • Attrition reported • Comparing groups at baseline and follow -up x2 • Confounders were controlled • Validity of questionnaires reported Limitations • Blinding not reported • 70% male • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
17.	Han et al. (2010) USA	• RCT • A community-based trial • Sample: adults Korean Americans (KAs) with hypertension with a mean age 52 years (range from 40-64 years), intervention group 1 (more intensive counselling, MI) (n=182), intervention group 2 (less intensive counselling, LI) (n=178), male and female. • **Intervention**: participants received either in-class or mail based hypertension education for 6 weeks, at 3 months adults randomly assigned to more intensive (MI) bi-weekly or less intensive (LI) monthly telephone counselling groups (by nurse) for 12 months.	At baseline, T2= at 15 months • At 1-min intervals using the A&D UA-767 • Disease knowledge: measurements not reported • Cost effectiveness: measurements not reported	• The average length of the s counselling sessions for the MI group was longer than for the LI group ($p<0.001$) • At T1 over the 12-month counselling period, both groups showed a positive trend toward an increase in medication-taking. • The MI group reported significant increase in medication taking ($p= 0.041$), while the increase in the LI group was not significant ($p > 0.05$)	Moderate Strengths • Adequate sample size • Attrition reported • Comparing groups at baseline and follow-up x1 Limitation • Blinding not reported • One study site • Korean Americans

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
18.	Harrison et al. (2002) Canada	• RCT • Two general medical unites of a large urban teaching hospital (one site) • Sample: adults diagnosed with congestive heart failure mean age 76 years (range 33-93 years), intervention group (n=92), control group (n=100), male and female. • **Intervention** (transitional care): adults received the standard discharge planning and care, plus a comprehensive programme (education counselling protocol and education for heart failure self-management, and additional and planned linkages to support individuals in aspect of their care): a telephone outreach from the hospital nurse within 24 hours of discharge; education booklet	At baseline, T1= two weeks, T2=six weeks, T3=12 weeks after hospital discharge Primary outcomes • Health related quality of life, symptom distress and function (the Minnesota Living with Heart Failure Questionnaire (MLHFQ)) Secondary outcomes • Quality of life (SF-36) and the number of all-cause emergency room visits and hospital readmissions.	• Quality of life for both groups improved at (T1) (no p-value reported). • At T3, the improvement from baseline for the intervention group was 43% compared with 14% for the control group ($p<0.001$). In terms of the physical dimension, the intervention group improved 42% from baseline compared with 9% for control group ($p<0.001$). • At T3, an improvement in the physical domain reported in the intervention group compared to the control group ($p=0.07$). • An improvement for the intervention group reported in the mental domain compared to the control group at T2 ($p=0.05$). • The rate of first emergency room visits was 46% in the intervention group compared with 29% in the control group ($p=0.03$).	Moderate Strengths • Double blinded • Adequate sample size • Attrition reported • Comparing groups at baseline and follow-up x3 • No confounders reported • Validated questionnaires used Limitations • One study site • Self-report questionnaires • No clinical data reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
19.	Hartford et al. (2002) Canada	• RCT • A large, tertiary care teaching hospital covering south western Ontario • Sample: adults were having CABG and had a partner or family member at home involved in their care with a mean age 62.7 years, intervention group (n=63), control group (n=68), male (84.1%-88.2%) and female. • **Intervention**: nurses delivered health promotion about medication for pain relief, distances to walk, rest stops during the drive home at the day of discharge. Then a follow-up in 6 telephone calls were undertaken on day1, 2 and 4, and weeks 1, 2 and 7 after discharges. Telephone calls ranged from 20 to 60.	At baseline, T1=2 weeks, T2=4 weeks, T3=8 weeks • The global anxiety (the Beck Anxiety Inventory (BAI))	• At T1, a lower anxiety was reported in both groups, the intervention group reported significantly less anxiety ($p<0.041$).	Moderate Strengths • Double blinded • Adequate sample size • Attrition reported • Comparing groups at baseline and follow-up x3 • No confounders reported Limitations • One site • 84%-88% male • Self-report questionnaires • No clinical data reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
20.	Holst et al. (2007) Sweden	• RCT • Eight primary care centres (8 sites) • Sample: adults diagnosed with HF or typical signs and symptoms of HF with a mean age 79 years (n=78), male and female. • **Intervention**: one intensive session with education and counselling in the home of patient at the beginning of the study to improve the patient's understanding of HF and self-management. The interactive HF education included a multimedia programme on CD-ROM.	At baseline, T1= 3months, T2= 12 months. • Quality of life instruments (EQ-5D questionnaire to measure morbidity, self-care, usual activities, pain / discomfort and anxiety/ depression. • Self-care behaviour instruments (the European Heart Failure Self-Care Behaviour Scale EHFScBS questionnaire)	• No significant differences were reported between baseline and T2. However, between T1 and T2 the men decreased their self-care behaviour significantly than women. (p=0.012) • Forty-seven percent (25/53) of the intervention group did not weigh themselves regularly at any of the three occasions and 19% (10/53) were adherent to daily weighing at all three time points. The remaining 34% (18/53) adhered at one or two time points (No p-value reported). • At baseline, 70% (38/54) of the intervention group followed the recommendations. Only 15% (8/52) did not adhere at any of the three occasions, 35% (18/52) were adherent at one or two time points, and 50% (26/52) followed the fluid restriction at all three points (No p-value reported). • At baseline, 50% of the intervention group answered that they had adhered to the salt recommendation which remained unchanged over the three points (No p-value reported).	Moderate Strengths • Cluster RCT • Multiple sites • Attrition reported • Comparing groups at baseline and follow-up x2 • Testing the reliability and validity of one questionnaire reported Limitations • Blinding not reported • Small sample size • No control group • Self-report questionnaires • No clinical data reported • Missing data reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
21.	Jaarsma et al. (2000) Netherlands	• RCT study • A cardiology Unit (one site) • Sample: adults diagnosed with heart failure diagnosis, Association (NYHA) functional class III and IV (sever state of the disease) age over 50 years, intervention group (n=58), control group (n=74), male 60% and female 40%. • **Intervention:** the intervention included intensive education by a nurse about the consequences of heart failure in daily life by use of a standard nursing care plan (an average 4 visits in the hospital, 1 telephone call, and 1 home visit).	At baseline, T1=1 month, T2=3 months, T3=9 months • The Appraisal of Self-care Agency (ASA) Scale: adults' ability to care about themselves • Self-care behaviour (the Heart Failure Self-care behaviour Scale) • Quality of life; functional capabilities (the Heart Failure Functional Status Inventory) • Psychosocial adjustment to illness (a translated version of the Psychosocial Adjustment to Illness Scale (PAIS)) • Overall well-being (Cantril's Ladder (ladder of life))	• After T1, the both groups reported better self-care behaviour compared with their baseline. • The intervention group reported complying with self-care behaviours compared those in the control group (p=0.001). • The average number of symptoms decreased significantly in both groups, from 3.9 at baseline to an average of 1.9 symptoms in the control group and 2.2 symptoms in the intervention group at T2 of follow-up (p<0.001). • The intervention group reported higher symptom severity at baseline and lower symptom severity during follow-up (p=0.02). • The intervention group reported a significantly larger decrease in symptom distress than adults from the control group (p=0.04). • A better psychosocial adjustment to illness in both groups from baseline to T3 (control group: p=0.03; intervention group: p=0.03). • After T1, the intervention group reported a statistically significant higher wellbeing score than the control group (p=0.04).	Moderate Strengths • Double blinded • Adequate sample size • Attrition reported • Comparing groups at baseline and follow -up x3 Limitations • One study site • A missing values was reported • Attrition was high • No clinical data reported • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
22.	Jerant et al (2001) USA	• RCT • The university of California hospital (one site) • Sample: adults diagnosed with CHF aged 40 and older, telecare group (n=13), telephone group (n=12), control group (n=12), male and female. • **Intervention**: adults assigned to telephone care received scheduled phone calls from a nurse in the intervening period, whereas those assigned to the video-based telecare group received scheduled home telecare visits.	At baseline, T1=60 days Primary outcomes • Health care utilisation (mean CHF-related hospital readmission charges as a proxy) Secondary outcomes • Mean length of stay all-cause readmission, associated charges, ED visits and associated charges; and SF-36, MLHFQ, and CSQ scores	• Significantly less CHF-related ED visits (p=0.0342) and charges (p=0.0487) were observed for both intervention groups as compared with the control group. • Mean total care charges were 68% lower in the home telecare group and 69% lower in the telephone group than in the control group (No p-value reported).	Weak Strengths • No confounders reported • Attrition reported • Comparing groups at baseline and follow -up x1 Limitations • Blinding not reported • One study site • Small sample size • Study underpowered

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
23.	Jiang et al. (2007) China	• RCT • Two tertiary medical centres (2 sites) • Sample: adults with IM or angina pectoris, intervention group (n=83 mean age 61.37 years) and control group (n=84 mean age 62.11 years), male and female. • **Intervention:** the Intervention was a 12-week (CR) hospital-based patient/family education (educations on self-managed cardiac rehabilitative care after discharge) and home-based rehabilitation care (to provide a follow-up professional support for the patient and their family members through home visits and telephone calls).	At baseline, T1=3 months, T2=6 months • Dornelas et al. (2000) (Smoking status) • The Jenkins Activity Checklist for Walking (Jenkins 1989) (Walking performance) • Step II diet adherence (adherence to the step II diet was measured using a 3-day dietary record) • Medication adherence (the self-reported drug compliance scale) • Cardiac physiological risk parameters balance scale (weight) and auscultator method (BP)	• Intervention group reported a significant increase in the physical activity ($p<0.05$) and the weight management ($p<0.05$) at both T1 and T2. • At T1, a significant reduction in TG ($p<0.001$), TC ($p=0.001$), LDL levels ($p=0.001$) and in systolic and diastolic BP ($p<0.05$) were found in the intervention group. • At T2, a significant reduction was only found in TG ($p<0.05$), TC ($p=0.001$) and LDL ($p=0.001$) levels.	Strong Strengths • Double blinded • Two sites • Adequate sample size • Attrition reported • Comparing groups at baseline and follow-up x2 • No confounders reported • Clinical data reported Limitations • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
24.	Karlsson et al. (2005) Sweden	• RCT study • Out-patient clinics at one teaching hospital (multiple sites) • Sample: patients with history of heart disease, hypertension or diabetes mellitus age > 60 years, intervention group (n=103), control group (n= 105), male and female. • **Intervention**: nurses delivered health education and written information to patients regarding medications, secondary prevention care plans.	At baseline, T1 (6 months) • Disease knowledge (questionnaire designed for the study) • Quality of life (a Mini Mental State Examination (MMSE))	• At T1, the intervention group had higher disease knowledge than the control group ($p<0.01$). • At T1, there were no improvements in the quality of life in both groups.	Moderate Strengths • Single blinded • Multiple sites • Adequate sample size • Attrition reported • Comparing groups at baseline and follow -up x1 • Validated questionnaires used Limitations • One study site • Confounders (e.g. education level) reported • No clinical data reported • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
25.	Kommuri et al. (2012) USA	• RCT study • One teaching hospital (one site) • Sample: patients with history of heart failure mean age 67 years, intervention group (n=128), control group (n=137), male and female. • **Intervention**: nurses delivered one hour (over 3 months) counselling about the basic principles of heart failure, role of dietary sodium, importance of limitation of fluid intake as well as the mechanisms of diuretics and the rationale for other pharmacotherapy.	At baseline, T1 (3 months) • Disease knowledge (Heart Failure Knowledge Questionnaire)	• At T1, the intervention group reported a significant improvement in the disease knowledge ($p<0.001$).	Moderate Strengths • Adequate sample size • Attrition reported • Comparing groups at baseline and follow-up x1 • Validated questionnaires used Limitations • Blinding not reported • One study site • Confounders (e.g. BP) reported • No clinical data reported • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
26.	Little et al. (2004) UK	• RCT study • Four practice setting; deprived inner city, rural small town, market town and cathedral city (4 sites) • Sample: adult with high risk of CHD with a mean age 59.0 years, GP group (n=72) or no GP group (n=79); intervention group (nurse group) (n=73) or no nurse group; (n=78) and booklet group (n=75) or no booklet (n=76), male and female. • **Intervention**: a counselling session given by a nurse on the physical activity based on attitudes, perceived control of behaviour and techniques for implementing behaviour (identifying a precise time and place to start).	At baseline, T1=1 month • BP • BMI • Serum cholesterol: non-fasting total cholesterol, high density lipoprotein (HDL), and cholesterol/HDL ratio • The well-validated Godin questionnaire (multiplies the number of episodes of exercise by relative energy expenditure in each; 'Stages of Change') • Hospital Anxiety and Depression Scale (HADS) and physical fitness/performance • The Canadian Home Step Test and the 6-minute walking test (exercise performance to assess fitness)	• Intervention group increased taking regular exercise ($p<0.001$) • The counselling and booklet together possibly increased distance walked more than either alone ($p=0.034$) and reduced in cholesterol/HDL ratio ($p=0.052$). • At T1, the intervention group reported a reduction in depression with no significant difference. Secondary analysis • Both the prescription and counselling groups reported significant changes from baseline in both physical activity and fitness (walking distance) (no p-value reported). • No changes in BP reported.	Moderate Strengths • Factorial RCT • Multiple sites • Moderate sample size • Attrition reported • Comparing groups at baseline and follow-up x1 • Validated questionnaires used Limitations • Blinding not reported • Confounders reported • No clinical data reported • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
27.	Mayou et al. (2002) UK	• RCT study • John Radcliffe Hospital, Oxford (one site) • Sample: adults diagnosed with MI aged 70 or under intervention group (n=56), control group (n=58), male and female. • **Intervention**: nurse delivered health promotion on behavioural principles and provided a handbook treatment: adults were seen two to four times in hospital face-to-face (133 minutes), and then they contacted by a telephone call (13 minutes) to review goals and discuss problems and answer questions.	At baseline, T1=1 month, T2= 3months, T3= 12 months • The Hospital Anxiety and Depression Scale (HADS) • The Dartmouth COOP scale for health-related quality of life.	• At T2, the intervention group had significantly improvement in quality of life than the control group ($p<0.004$). • At T2, there was a significant improvement in the intervention group on anxiety and depression ($p<0.002$).	Moderate Strengths • Adequate sample size • Attrition reported • Comparing groups at baseline and follow up x3 • No confounders reported Limitations • Blinding not reported • One study site • The study was not fully controlled for 1 year follow-up • Self-report questionnaires • No clinical data reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
28.	McHugh et al. (2001) UK	• RCT • A community setting • Sample: adults were waiting for coronary artery bypass grafting (CABG), intervention group (n=49, age 35-77 years, male (71.4%) and female (29%). Control group (n=49), age 42-76 years, male (79.6%) and female (20%). • **Intervention**: a cardiac nurse assessed the health needs to determine the content of a programme of monthly health education sessions (adults' homes and practice clinic). The programme included behaviour risk factors (smoking, physical inactivity, poor diet and excess alcohol) which based on a person's readiness to change. Nurses also provided information about the surgery, hospital stay and recuperation period.	At baseline, T1=before the CABG surgery • Smoking status (numbered of cigarettes smoked per day and physical activity as minutes spent per day. • BMI • BP • Serum cholesterol (Institute of Biochemistry, Glasgow Royal Infirmary NHS trust). • General health status (the short form health survey (SF-36)) • Anxiety and depression (Hospital Anxiety and Depression Scale HADS) • Adults' views on the intervention programme (a designed short questionnaire)	• The intervention group reported a higher smoking cessation rate than the control group (p=0.001). • BMI increased in the control group but reduced in the intervention group (p=0.01). • Regular exercise increased in the intervention group by 33% but reduced in the control group by 16% (p<0.001). • The total cholesterol reduced in the intervention group but increased the control group (p=0.003). • The BP did not change in the control group but reduced in the intervention group (p=0.001). • Anxiety scores increased in the control group but reduced in the intervention group (p<0.001). • Depression score increased in the control group but reduced in the intervention group (p<0.001). • The intervention group reported satisfaction with the intervention programme (No p-vale reported). • The intervention group reported more improvements in general health status than the control group (p<0.001).	Strong Strengths • A community setting • Adequate sample size • Attrition reported • Comparing groups at baseline and follow up x1 • No confounders reported • Validated questionnaire used • Clinical data reported Limitations • Blinding not reported • Self-report questionnaires • Male 70%-79%

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
29.	McKinley et al. (2009) USA and Australia	• RCT • Six centres (five in USA and one in Australia) (six sites) • Sample: adults diagnosed with CHD with a mean age 67 years, intervention group (n=1777), control group (n=1745), male and female. • **Intervention**: the intervention group received one-on-one education (40 minutes using a flipchart and pictures, phone call after one month to review the main points) and counselling sessions by a nurse (at patient's home or the research office).	At baseline, T1=3months, T2=12 months • ACS Response Index (knowledge, attitudes and believes about disease) • Anxiety and depression (The Multiple Affect Adjective Checklist MAACL) • Perceived control (The Control Attitudes scale-Revised (Moser et al. 2009)	• Knowledge, attitudes and beliefs scores higher significantly in the intervention group than in the control group at T1 and T2 ($p<0.0005$) • Both groups reported moderately high levels of perceived control but higher perceived control over cardiac illness was in the intervention group ($p<0.0005$)	Strong Strengths • Multiple sites • A large sample size • Attrition reported • A high retaining rate (80%) at 12 months follow-up • Comparing groups at baseline and follow up x2 • Questionnaires were repeated for reliability Limitations • Blinding not reported • Self-report questionnaires • No clinical data reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
30.	Meng et al. (2007) USA	• RCT • New York, the West Virginia and Ohio (three sites). • Sample: adults diagnosed with a heart condition with a mean age 77 years, intervention group (n=138), control group (n=143), male and female. • **Intervention**: Nurses made monthly home visits to teach participants and/or their informal caregivers about disease self-management (face to face and telephone) and Individualized health promotion coaching.	At baseline, T1= 2 years • Changes in functional status: the difference between the number of Activities of Daily Living (ADL) dependencies. • Total health care expenditures: costs by various payers (Medicare, Medicaid, private pay, VA) and intervention cost.	• The intervention group reported improvements (i.e. reduction) in the quality of life of (p=0.055; not significant). • Overall, the mean total health care expenditure was lower in the intervention group than that in the control group p=0.82; not significant). • Standardised predictions showed that the intervention group resulted in lower total health care expenditures over 2 years (No p-vale reported).	Moderate Strengths • Three sites • Adequate sample size • Attrition reported • Comparing groups at baseline and follow up x1 • Validated questionnaire used Limitations • Blinding not reported • Confounders reported • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
31.	Mittag et al. (2006) Germany	• RCT • Three CR hospitals (3 site) • Sample: adults had a cardiac event, intervention group (n=171 mean age 58.8 years), control group (n=172, mean age 60.92 years), male 82% and female 18%. • **Intervention**: monthly nurse-initiated telephone contacts for counselling interventions (example physical exercise, nutrition and smoking cessation). On average each patient received 10 calls lasting from 2 to 92 min (average call 24 min).	At baseline, T1= 12 months • A questionnaire on psychological status (anxiety: symptom checklist-90 [SCL_90], depression: Centre for Epidemiologic Studies Depression Scale [CES-D] • Health-related behaviours (smoking status, hours of physical activity per week, food intake) • BMI, BP and serum cholesterol.	• Smoking rates considerably declined in the two study groups (intervention and usual care $p<0.001$). • In the control group, the rate of anxiety and depression increased substantially during the follow-up period but decreased in the intervention group ($p=0.046$). • The rate of adults being physically active increased in both groups. • No effect on BP, cholesterol level on the intervention.	Moderate Strengths • Placebo group • Multiple sites • Adequate sample size • Attrition reported • Comparing groups at baseline and follow up x1 • Nurses received training • Clinical data reported Limitations • Blinding not reported • Confounders reported • 82% male • The power to detect the effects was low • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
32.	Moher et al. (2001) UK	• RCT study • Twenty one general practices across Warwickshire (21 sites) • Sample: adults diagnosed with coronary heart disease age 55-75 years, audit group (n=559), GP recall group (n=682), intervention (nurse recall) group (n=665), male and female. • **Intervention** (nurse recall group): nurses gave ongoing support to the adults at a practice setting with recall system for adults review in a nurse led clinic after prescribing anti-platelet drugs, hypotensive agents, and lipid lowering drugs.	At baseline, T1=18 months • Primary outcomes: BP since diagnosis, serum cholesterol, smoking habit. • Secondary outcomes: prescribed medications of hypotensive, lowering lipid and anti-platelet. • Instruments: a questionnaire including two quality of life instruments (the Dartmouth COOP charts and the EuroQol questionnaire without the visual analogue scale)	• Prescribing of anti-platelet increased in all groups, but at follow-up the intervention group reported higher levels of prescribing than the GP recall and audit groups (no p-value reported). • Raised BP was observed in 18% of the audit group, 17% of the GP recall group and 13% of the intervention group (p>0.001, not significant) • No differences between groups in QOL domains • At T1, cholesterol level was recorded in 40% of the audit group, 39% of the GP recall group and 43% of the intervention group (no p-value reported) • Smoking status did not differ significantly between the three groups.	Moderate Strengths • Cluster RCT • Multiple sites • A large sample size • Attrition reported • Comparing groups at baseline and follow up x1 • No confounders reported • Clinical data reported Limitations • Blinding not reported • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
33.	Moore et al. (2006) USA	• RCT • Three outpatient cardiac rehabilitation programmes in Cleveland, Ohio (3 sites) • Sample: adults had a recent cardiac event (myocardial infarction, coronary artery bypass and/or angioplasty) with a mean age 62 years (38-86 years intervention group (n=119), control group (n=131), male and female. • **Intervention**: the intervention comprised five small group (6-8 adults) counselling and behaviour modification sessions. A nurse provided three 90 minutes sessions once a week in the last 3 weeks of the intervention and two sessions held at 1 and 2 months following completion of the intervention.	At baseline, T1= one month, T2=12 months • Exercise (portable wrist watch HR monitors (Polar Vantage NV™, Polar Electro, Kempele, Finland) and exercise diaries. • Benefits/ barriers (the 43-item Exercise Benefits/ Barriers Scale). • Exercise self-efficacy (two scales of the Exercise Barriers and Adherence Self-Efficacy Scale). • Problem solving (the 32-item Problem Solving Inventory). • Motivation (overall score on the Index of Self-Regulation Short Version). • Social support (Social Support for Exercise Scale) • Cardiac functional status (New York Heart Association (NYHA) Classification • Fitness (6-MinuteWalk Test) • waist: hip ratio	• The intervention group significantly continued to exercise longer compared to the control group (p=0.02) • A decrease in exercise frequency over time was found, with the intervention group exercising an average of 7.6 (SD = 7.0) times in one month and the control group averaging 7.1 (SD = 8.2) times over 12 Month (no p-value reported).	Strong Strengths • Single blinded • Multiple sites • Adequate sample size • Comparing groups at baseline and follow up x2 • Attrition reported • No confounders reported • Clinical data reporte Limitations • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
34.	Moser et al. (2012) Australia, USA and New Zealand	• RCT • Community hospitals and academic medical centres (multiple sites) • Sample: patients with coronary heart disease, intervention group (n=1330 age 68±11 years); control group (n=1267 age 68±10 years), male and female. • **Intervention**: one face to face session providing information about typical symptoms and medications; counselling to anticipate emotional responses to acute coronary syndrome symptoms; and providing strategies for managing symptoms to increase the sense of perceived control and reduce anxiety. The intervention lasted for 45 minutes.	At baseline, T1=3months, T2=12 months • Anxiety (Multiple Affect Adjective Checklist) • Perceived control (Control Attitudes Scale Revised)	• At T2, the levels of anxiety was higher in the control group than the intervention group ($p<0.01$) • At1 and At2, the perceived control was higher in the intervention group than the control group ($p<0.01$)	Moderate Strengths • Multiple sites • Large sample size • Attrition was reported • Comparing groups at baseline and follow up x2 • Validated questionnaires were used • Confounder controlled Limitations • Blinding not reported • Low response rate (37.7%) • 70% male • One confounder reported (gender) • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
35.	Murchie et al. (2004) UK	• RCT study • 19 GPs in north-east Scotland (19 sites) • Sample: adults diagnosed with coronary heart disease with a mean age 66 years (under 80 years), intervention group (n=673, control group (n=670), male and female. • **Intervention**: adults were invited to attend secondary prevention clinics at their general practice (2-6 monthly follow-up) to provide information according to clinical circumstances by nurses.	At baseline, T1= 1 year, T2= 4 years • SF-36 • The Angina TyPe (presence, frequency and course of chest pain) • Hospital Anxiety and Depression Scale (HADS) (mental status)	• At T1, the intervention group reported significantly better than the control group in five out of eight domains (physical: p<0.001; Role physical: p< 0.001; Role emotional: p<0.059; energy: p<0.074); pain: p<0.013). • At T2, the intervention group reported higher than the control group in all domains, but difference no longer significant (No p-value reported). • Role physical score improved more in the intervention group between 1 and 3 years (p=0.035) and there was a trend of improvement in energy score with increasing exposure to clinics (p=0.043).	Moderate Strengths • Double blinded • Multiple sites • Large sample size • Sufficient follow-up time (4 years) • Attrition was reported • Comparing groups at baseline and follow up x2 • High response rate 87% • No confounders reported • Validated questionnaires used Limitations • Crossover of adults from control group to the intervention group after the original trial year (a source of bias) • No clinical data reported • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
36.	Paez and Allen (2006) USA	• RCT • A tertiary medical centre (one site) • Sample: adults diagnosed with hypercholesterolemia and CHD with a mean age 60 ± 9 years, intervention group (n=115), control group (n=113), male 72% and female 28%. • **Intervention** (NURS group): participants received case management from an nurse for 1 year after hospital discharge and providing one outpatient visit 4-6 weeks for lipid management (follow-up telephone calls reported)	At baseline, T1: 6 months, T2: 12 months. • Serum lipid: measured after a 12-hour overnight fast method . • Resource use and costs (CEA cost effectiveness)	• At T2, the average LDL-C and TC levels were significantly lower in the intervention group (39%) than the control group (29%) (p=0.001). • The intervention group reported significantly more LDL-C levels <2.59 mmol/L (100 mg/dL) than the control group (p=0.001). • Cost-effectiveness: the 12- month incremental cost per unit (mg/dL) reduction in LDL-C for the intervention group including the nurse's time, lipid-lowering drug costs, and lab monitoring costs was $26.03. Cost-effectiveness as a percent reduction in LDL-C was $39.05 for the 12-month period (no p-value reported).	Weak Strengths • Adequate sample size • Comparing groups at baseline and follow up x2 • Clinical data reported Limitations • Blinding not reported • One study site • Attrition was not reported • 72% male • Cofounders reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
37.	Quist-Paulsen and Gallefos (2003) Norway	• RCT study • Cardiac ward of a general hospital (one site) • Sample: adults (current smokers) diagnosed with MI, unstable angina, or care after coronary bypass surgery with a mean age 57 years (under 70 years), intervention group (n=118), control group (n=122), male (75%) and female (25%). • **Intervention**: nurses consulted the adults once or twice during their hospital stay, then by telephoned (5 times) two days, one week, three weeks, three months and 5 months after discharge. The intervention was based on a 17 page booklet specially produced for the trial. Duration was 147 minutes.	At basline, T1= 6 weeks, T2= 12 months • Smokers or non-smokers (a nicotine metabolite concentration in urine < 2.0 mmol/mol creatinine)	• At T2, the smoking rates were 57% in the intervention group and 37% in the control group (absolute risk reduction 20%, 95% confidence interval 6% to 33%) (p=0.004).	Moderate Strengths • Adequate sample size • The dropout rate <10% • Attrition reported • Comparing groups at baseline and follow up x2 • Clinical data Reported Limitations • Blinding not reported • One study site • Bias might result from contamination between groups • Confounders reporte • Male 75%

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
38.	Reid et al. (2003) Canada	• RCT • A tertiary care cardiac facility • Sample: adults admitted for coronary angiography, PTCA, MI or CABG, intervention 1 (minimal care) group (n=128 mean age 54.2 years), intervention 2 (stepped care) group (n=126 53.5 years), male (80%) and female (20%). • **Minimal intervention**: brief individual counselling at the bedside delivered by a trained nurse (5-10 minutes) with guidelines for brief clinical interventions for patients willing to quit smoking • **Stepped intervention**: a nurse-counsellor 4 weeks after hospital discharge; nicotine patch therapy (4 weeks) and three 20 minutes face-to-face counselling sessions over an 8 weeks period	At baseline, T1=3 months, T2=12 months • Abstinence from smoking (a self-report questionnaire) • Nicotine dependence (Fagerstrom Tolerance questionnaire) • Motivational readiness to quit smoking (the stages of change algorithm) • Self-efficacy scale (a 5-points Likert scale)	• At T1, the abstinence rate in the intervention 2 group was 11% higher than in the intervention 1 group (p=0.05). At T2, the abstinence rate was 3% higher for the intervention 2 group (p=0.36; not significant). • At T1, the intervention 2 group reported higher quit smoking rate (19%) among angiogram/PTCA adults (p=0.03) and a 23% higher quit rate among CABG adults (p=0.18, not significant difference).	Moderate Strengths • Adequate sample size • No confounders reported • Attrition reported • Comparing groups at baseline and follow up x2 Limitations • Blinding not reported • One site • No clinical data reported • 80% male • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
39.	Rudd et al. (2004) USA	• RCT • Two medical clinics (2 site) • Sample: adults diagnosed with hypertension, intervention group (n=74, mean age 59 years), control group (n=76, mean age 60 years), male and female. • **Intervention**: The nurse started follow-up phone contacts at 1 week and at 1, 2, and 4 months. The calls averaged 10 min in duration or 40 min in all. During phone contacts, the nurse asked adults about each medication dosage and any problems experienced since the previous contact. They also encouraged adults to telephone anytime during regular hours with questions or concerns.	At baseline, T1=3months, T2= 6months • BP • Medication adherence	• At T2, systolic BP fell by 14.2 mm Hg in the intervention group) and by 5.7 mm Hg in the control group ($p<0.01$). One-way ANOVA confirmed significant decreases in both systolic ($p<0.01$) and diastolic BP ($p<0.01$) in the intervention group but non-significant changes in the control group. • At T2, the intervention and control groups reported no drug therapy was 4% and 22%, respectively ($p<0.01$). • The rate of daily medication adherence during the 6-month study period was 80.5% - 23.0% in the intervention whereas in the control group was 69.2% -31.1% ($p<0.03$).	Moderate Strengths • Singe blinded • Two sites • Adequate sample size • Attrition reported • Comparing groups at baseline and follow up x2. • Using validated questionnaires • Clinical data reported Limitations • Confounders reported • Power calculation was not reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
40.	Smith and Burgess (2009) Canada	• RCT • Four cardiac units in a large urban hospital (one site) • Sample: adults with acute MI or CABG with a mean age 54 years intensive intervention group (n=137), minimal intervention group (n=139), male and female. • **Minimal intervention**: the nurse advised adults on smoking cessation at the bedside during the patient's hospital stay. • **Intensive intervention**: adults in this group received the minimal intervention plus 45–60 minutes of bedside education and counselling, take home materials (video, workbook, audiotape) and 7 telephone counselling sessions initiated by the research nurse (2, 7, 14, 21, 30, 45 and 60 days after discharge), telephone intervention lasts from 5-10 minutes per call.	At baseline, T1=3 months, T2=6 months, T3=12 months • Medical history measured by the international classification of disease. • Smoking status (the National Heart, Lung and Blood Institute; (5-item modified Fagerstrom Tolerance Questionnaire1). • Proxy confirmation (smoking status).	• The intensive intervention group than the minimal intervention group reported not smoking at T1 (p=0.009), T2 (p=0.003) and T3 (p=0.007). The odds of quitting were two times more for the intensive intervention group compared with the minimal intervention group at T1, T2 and T3. • More adults in the intensive intervention than in the minimal intervention were confirmed non-smokers at T3 (p=0.002). • The intervention group (p = 0.004) and the reason for hospital admission (CABG v. acute MI) (p=0.04) were significant predictors of continuous abstinence. • Adults received the intensive intervention had significantly higher rates of continuous abstinence than those who received the minimal intervention (p=0.003).	Strong Strengths • Single blinded • Adequate sample size • Attrition reported • Comparing groups at baseline and follow up x3 • Validated questionnaires used Limitations • One study site • No clinical data reported • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
41.	Smith et al. (2005) USA	• RCT • A single centre in San Antonio (one site) • Sample: adults diagnosed with heart failure with a mean age 70.9±9.9 years, intervention 1 group (disease management) (n=356); intervention 2 group (augment disease management) (n=345); control group (n=359), male and female. • **Disease management intervention**: a registered nurse performed telephonic education (weight management, medication compliance and physical activity • **Augmented disease management intervention**: participants received the same disease management services but also were issued a blood pressure cuff, a finger pulse Oximeter, and an activity monitor.	AT baseline, T1=6 months, T2=12 months and T3=18 months • SF 36 and Health Related Quality of Life (HRQL).	• At T1 and T2, the intervention groups was significantly more likely than the control group to report that their health had improved in the preceding year (no p-value reported). • At T1, 34.6% of the intervention 1 group and 25.6% of the control group responded that their health had improved in the previous year (p=0.04). • At T2, the rates of responses indicating improved health were 36.9% in the intervention 2 group and 26.8% in the control group (p=0.004). • A similar rate of positive responses was observed in the intervention groups through the 18-month, with 36.9% and 29.9% of the intervention 2 and intervention 1 groups, respectively (no p-value reported).	Moderate Strengths • Adequate sample size • Attrition reported • Comparing groups at baseline and follow up x3 • No confounders reported Limitations • Blinding not reported • One study site • Low follow-up rate 39.2% • The randomisation method was not reported • No clinical data reported • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
42.	Sol et al. (2008) Netherlands	• RCT • A hospital setting (one site) • Sample: adults with a high risk or diagnosed with cerebrovascular disease, abdominal aortic aneurysm or peripheral arterial disease, age younger than 80 years, intervention group (n=95), control group (n=80), male (79%) and female (21%). • **Intervention**: patients were invited to visit an outpatient clinic, which run by nurse, for reducing the risk of vascular disease (health education); 5 visits or telephones	At baseline, T1= 6months, T2= 12 months • Self-efficacy scale (Adapted diabetes mellitus type 2 self-efficacy scale).	• Self-efficacy in eating healthy foods (p=0.01) and in physical activity (p=0.03) improved significantly from baseline during follow-up in the intervention group.	Moderate Strengths • Adequate sample size • Attrition reported • Comparing groups at baseline and follow up x2 • No confounders reported • Reliability of the questionnaires reported Limitations • Blinding not reported • One study site • 79% Male • No clinical data reported • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
43.	Stromberg et al. (2003) Sweden	• RCT • One university hospital and two county hospitals (3 sites) • Sample: adults diagnosed with an end stage of heart failure (HF) or congestive heart failure, intervention group (n=52 mean age 77 years), control group (n=54 mean age 78 years), male and female. • **Intervention**: trained and experienced cardiac nurses followed-up with patients at a nurse-led clinic, the first visit was 2-3 weeks after discharge (1 hour), providing education (written and verbal) about signs and symptoms of HF; dietary changes; smoking cessation and exercise; and social support to the patient and his family).	At baseline, T1=3 months, T2= 12 months • Medical chart of the patient • Self-care behaviour (the Heart Failure Self-care Behaviour Scale)	• After T1, the intervention group had 81% of target dose compared to 61% in the control group (p=0.005). • The number of admissions to hospital during T1 after hospitalisation was significantly lower in the intervention group with a reduction of 42% (p=0.047). • The number of days in hospital was significantly lower in the intervention group after T1 (p=0.045) • At T1, the intervention group had improved their self-care behaviour compared to the control group (p=0.02). • At T2, The intervention group had significantly higher self-care scores compared to the control group (p=0.01).	Moderate Strengths • Double blinded • Multiple sites • Attrition reported • Comparing groups at baseline and follow up x2 • Clinical data reported Limitations • Small sample size • Confounders reported • Using self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
44.	Stromberg et al. (2006) Sweden	• RCT • Five nurse-led heart failure clinics in southern and central Sweden (five sites) • Sample: adults diagnosed with heart failure with a mean age 70 years (32-91), intervention group (n=82) and control group (n=72), male and female. • **Intervention**: the same of individualised adult education as the control group (teaching about physiology, heart failure, symptoms, symptom-monitoring and life-style changes face to face for 60 minutes) and interactive multimedia programme (30-45 minutes) in which the nurse educated the adult to the programme and then the adult worked independently with the computer; the programme consisted of seven modules covering educational topics on heart failure and one module with a self-test	AT baseline, T1= 1 month, T2= 6 months • Knowledge and compliance with treatment and self-care behaviour; dimensions measured were salt and fluid restriction, symptom-monitoring, rest and activity, diuretics, definition of heart failure, compliance with medication and medical appointments (instrument designed for the study) • EuroQol (EQ-5D)	• The intervention groups reported higher in the disease knowledge after T1 (p=0.03). • After T1, the increase in knowledge compared to baseline was only significant in the intervention group (p=0.0001). • The intervention group was more compliance with diuretic therapy after T1 compared with the control group (p=0.01). • After T2, there were decreased in ability to perform daily activities and climb stairs improved and leg oedema, shortness of breath and pain decreased in the intervention group (p=0.001).	Strong Strengths • Multiple sites • Single blinded • Adequate sample size • Attrition reported • Comparing groups at baseline and follow up x2 • No confounders reported Limitations • Self-report questionnaires • No clinical data reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
45.	Tiessen et al. (2012) Netherlands	• RCT study • General practices (15 locations) • Sample: adults with CVD risk factors age (50-75 years), intervention group (n=89, mean age 65 years), control group (n= 90, mean age 65 years), only female. • **Intervention**: The patients received counselling regarding CVD risk factors from practice nurses trained in motivational techniques based on self-monitoring results. The counselling took places in general practices with follow-up 3 times at monthly intervals and after than at 3-month intervals for 12 months. The first session lasted 20 minutes, then according to patient preferences.	At baseline, T1=12 months • Self-report measurements i.e. smoking, physical activity <150 minutes/ week (Short Questionnaire to Assess Health-enhanced Physical Activity, SQUASH) • BMI and BP • Medical history (medication use) • Serum glucose	• Both groups reported improvements in physical exercise (improved both groups), body weight (improved both groups), BP (improved both groups), smoking cessation (improved both groups) and cholesterol level (improved in both groups) with no significant differences between the two groups.	Moderate Strengths • Multiple sites • Adequate sample size • Attrition reported • Comparing groups at baseline and follow up x1 • No confounders reported • Clinical data reported • Validated questionnaire used Limitations • Blinding not reported • Only female • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
46.	Tonstad et al. (2007) Norway	• RCT study • Residence of Oslo (one community) • Sample: adults diagnosed with hypertension with a mean age 55 years (30-69 years), intervention group (n=31), control group (n=20), male and female. • **Intervention**: The intervention was based on behavioural self-management and the trans-theoretical stages of change model, adults were scheduled for monthly meetings with the nurse for 6 months. The initial session lasted for 60 min and subsequent sessions lasted for 30 minutes.	At baseline, T1=6 months • The metabolic syndrome risk factors: the National Cholesterol Education Program/Adult Treatment Panel III. • Serum cholesterol, triglyceride and glucose concentrations (automated analyzer equipments (Hitachi 911; Hitachi Limited, Tokyo, Japan) and reagents from Boehringer Mannheim, Germany. • HDL cholesterol concentrations (the direct, enzymatic inhibition assay of Boehringer Mannheim). • Low density lipoprotein (LDL) cholesterol (Friedewald formula) • Plasma glucose the glucose oxidase method using Auto-Analyzer (Hitachi Inc., Tokyo, Japan). • Waist: hip ratio • BMI	• Body weight and waist circumference increased significantly in the control group (p=0.03 and p=0.008, respectively) but not in the intervention group. • The number of risk factors of the metabolic syndrome was 2.1 at baseline and 2.6 at T1 in the control group versus 2.2 and 1.9, respectively, in the intervention group (p=0.01). • A significant reduction in the intervention group was reported in the following domains; triglycerides (p=0.03), weight (p=0.001) and waist (p=0.009) compared with the control group.	Moderate Strength • One community • Comparing groups at baseline and follow up x1 • No confounders reported • Clinical data reported Limitations • Blinding not reported • Small sample size • Attrition not reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
47.	Torres-Arreola et al. (2009) Mexico	• RCT study • Three general hospitals (3 sites) • Sample: adults diagnosed with ischemic stroke with a mean age was 70 years (age over 40 years), intervention one (n=59), intervention two (n=51), male and female. • **Interventions**: two trained nurses applied the two rehabilitation interventions (72 hours after initial hospitalisation). The first intervention included two parts: education and physiotherapy at hospital then weekly home visit (average 15 visit and each visit was about 90 minutes); the second intervention consisted of education alone (at hospital then weekly home visit, each visit approximately 45 minutes).	At baseline, T1=1 month, T2=3 months, T3=6 months • ADL (Barthel index; Mahoney & Barthel 1965) • Social activities (Frenchay index; Wade et al. 1985), • Cognitive state (MMSE) (Sanchez-Ayendez et al. 2003) • Neurological damage (Canadian Neurological Scale, CNS) (Cote et al. 1986)	• In ADL domain, there was an improvement in both groups from a dependent functional status to independent from baseline to T3 ($p<0.05$). • In social ADL and cognitive state, both groups reported significantly improvements over time ($p<0.05$) without differences between the groups.	Moderate Strengths • Three sites • Moderate sample size • Attrition reported • Comparing groups at baseline and follow up x3. • Validated and reliable questionnaires were used Limitations • Blinding not reported • Confounder reported • Self-report questionnaires • No clinical data reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
48.	Tranmer and Parry (2004) Canada	• RCT • A cardiac surgery unite (one site) • Sample: Adults had undergone cardiac surgery with a mean age 65 years, intervention group (n=102, male 73.5% and female 26.5), control group (n=98, male 78% and female 21%). • **Intervention**: telephone calls (20-30 minutes) from advanced practice nurses in cardiac surgery at 3 and 4 days following hospital discharge then weekly for more 4 weeks (providing ongoing information, assessment and facilitated referrals to appropriate health care resources)	At baseline, T1= 5 weeks • SF-36 • Symptom distress (memorial symptom assessment scale MSAS) • Satisfaction with hospital care questionnaires developed by Shortell et al. (2000)) • Utilisation of health care resources	• There was a difference in the physical component score (PCS) between the intervention and control group was 0.04 (p =0.97; not significant). • The mean difference in the mental component score (MCS) was –1.25 (p=0.45) • In the 5 weeks following hospitalization 36 (19.6%) adults visited an emergency department, and 17 (9.2%) were readmitted (no p-value reported). • The scores for the "meeting needs after hospitalization" were higher for the intervention than the control group. In particular, the recovery-item scores were consistently higher for adults in the intervention group (p =0.03); side effect information, 61.5 versus 54.0 (p=0.05); with decisions about care, 66.6 versus 59.0 (p=0.06)	Moderate Strengths • Double blinded • A moderate sample size • Attrition reported • Comparing groups at baseline and follow -up x1 Limitations • One site • Self-report questionnaires • No clinical data reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
49.	Tseng et al. (2007) Taiwan	• RCT study • Thirty one long-term cares across Taipei city (31 site) • Sample: adults diagnosed with hemiplegia for 6 months since stroke with a mean age 75.05 years (55-88 years,), intervention 1 group (n= 21), intervention 2 group (n=21), control group (n=17), male (76%) and female (24%). • **Intervention group 1**: a registered nurse supervised adults to perform and complete the ROM protocol by themselves. • **Intervention group 2**: adults carried out the same ROM protocol with the nurse's presence to help them physically in achieving maximum ROM within or beyond their present ability • Participants in both intervention groups completed the ROM exercise protocol, five times per joint, twice per day and 6 days per week for 4 weeks with each session lasting approximately 10–20 minutes.	At baseline, T1= 4 weeks • The SPMSQ (Pfeiffer. 1975) for orientation, personal history, remote memory and calculations. • Post-stroke recovery Brunnstrom stage (Akay and Marsh 2001). • Outcome measures Functional independence (FIMTM-ADL subscale), joint angle, self-reported pain. • Depression: the Chinese version of Geriatric Depression Scale –Short Form (GDS-15).	• After T1, the mean difference in joint angles among the three groups was statistically significant ($p<0.001$); both the intervention groups had an increase in join angles compared with the control group. • The usual care group had a decrease in joint angles, on average -5.83 in upper extremities and -3.88 in lower extremities ($p<0.001$). The interventions groups had an increase in joint angles. The improvements were on average +5.42 and +2.14 for the intervention group I ($p<0.001$). • An improvement of +12.8 and +7.92 in was found in intervention group II ($p<0.001$). Scheffe post hoc comparison revealed the same results. • Pain scores dropped on average 7.62 in the intervention group I and decreased by 10.00 in the intervention group II (no p-value reported). • The depression decrease in both intervention groups with statistically significant between the control group and both intervention groups ($p< 0.05$).	Moderate Strengths • Single blinded • Multiple sites • Attrition reported • Comparing groups at baseline and follow up x1 • Test-retest reliability of questionnaires reported. Limitations • Small sample size • 76.3% male • Only hemiplegia stroke patients • Power calculation was not reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
50.	Woodend et al. (2008) USA	• RCT • A hospital (n= unknown sites) • Sample: adults diagnosed with HF and angina with a mean age 66 years, intervention (n=124), control group (n=125), male (70%) and female (30%). • **Intervention** (telehome monitoring): three months video conferencing with a nurse which held at least weekly with each patient including assessment of patient's progress and self-care education.	At baseline, T1=1 month, T2=3 months, T3= 12 months • Readmissions and health care resource use. • Symptoms and functional status (the Minnesota Living with Heart Failure questionnaire (LiHFe) and the Seattle Angina Questionnaire (SAQ). • SF-36	• There were reduction in both the number of admissions per adult and days spent in the hospital with angina receiving intervention group (51%, p=0.02 and 61%, p=0.04) compared with those receiving control group. • At T3, intervention group with angina had significantly fewer hospital admissions than control group (p=0.02); hospital admission rates were reduced by 45%. • There were also significant improvements in the both the physical (p=0.001) and emotional subscales (p=0.001) of the LiHFe over time. • The intervention group had significantly better functional status on both the overall score (p=0.003) and the physical subscale (p=0.001) at T2 than adults receiving control group. • At T3, the intervention group had higher quality of life in physical functioning (p=0.04), bodily pain (p=0.03), and social functioning (p=0.04) than the control group.	Moderate Strengths • Adequate sample size • Attrition reported • Comparing groups at baseline and follow-up x3 • No confounders reported Limitations • Blinding not reported • 70% male • No clinical data reported • Self-report questionnaires

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
51.	Yehle et al. (2009) USA	• RCT • 14 clinical sites in Lafayette and Indiana (14 sites) • Sample: adults diagnosed with HF with a mean age 67.3 years, intervention group (n=13), control group (n=10), male and female. • **Intervention**: Adults privately saw one nurse practitioner for a 10-minute physical examination and met in a group of up to 6 other adults with HF plus a friend or family member for a 1-hour semi-structured education (by the nurse practitioner and primary investigator) and support group.	At baseline, T1=8 weeks • The heart failure knowledge test (HKFT) (knowledge) • The self-care heart failure index (SCHFI) (self-care management and self-care maintenance)	• Baseline scores for the disease knowledge were similar for the intervention and control groups (p=0.14; not significant). Mean scores improved significantly more from baseline to T1 for the intervention group compared with the control group (p=0.038). • Scores for the self-care management improved significantly more for the control group compared with the intervention group from baseline to T1. • The mean scores for the self-care management in the intervention group declined from baseline to T1 (no p-value reported).	Weak Strengths • Multiple sites • Comparing groups at baseline and follow up x1 Limitations • Blinding not reported • Small sample size • Confounders reported • No data reported on the RCT method • Short time follow-up • Self-report questionnaires • No clinical data reported

No.	Authors Year Country	Design and Intervention	Measurement	Findings	Comments
52.	Zhao and Yuet (2009) China	• RCT study • A large comprehensive hospital, Tianjin • Sample: adults diagnosed with angina or MI with a mean age 72 years (over 60 years), intervention group (n=107), control group (n=113), male and female. • **Intervention** (transitional care programme (TCP): the TCP consisted of two phases, pre-discharge (a nurse from the central hospital) and post-discharge (two nurses from a community hospital for 4 weeks, telephone call and home visit), providing coordinated care with continuity of support to improve participants' self-management knowledge and skills (diet, medication, exercise and health related ifestyle).	At baseline, T1=4 weeks, T2= 12 weeks • Questionnaire developed for the study (disease knowledge and adherence, health care utilisation and satisfaction with care).	• In the intervention group, there were significant improvements in the level of understanding of diet, medication, exercise and health-related lifestyle, with significant differences ($p<0.05$) at all times (T2) for all outcome variables between the groups. • Adherence to diet, there was significant differences between the control and intervention groups at all three time-points, with improving more in the intervention group ($p<0.05$). • In adherence to medication, significant differences over time were observed at T1 and T2 in the intervention group ($p < 0.05$). • In adherence to health related lifestyle, the study group had a significantly better adherence level than the control group at all three time points ($p<0.05$). • In willingness to accept the community nursing follow-up, the control group expressed less willingness in both T1 ($p=0.001$) and T2 ($p<0.001$).	Strong Strengths • Single blinded • Adequate sample size • Attrition reported • Comparing groups at baseline and follow up x2 • Reliability of questionnaires reported • Test and re-test of questionnaires reported • The intervention was validated by expert team • Instrument testing reported Limitations • No clinical data reported • Self-report questionnaire

Appendix 2

Study Instruments

KING'S College LONDON

University of London

INFORMATION SHEET FOR PARTICIPANTS

(Registered Nurses)

REC Reference Number: PNM/11/12-97

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEET

An Exploratory Study of the Registered Nurse's Role in Health Promotion relating to Cardiovascular Disease in Jordan

We would like to invite you to participate in this original research project about the Registered Nurses' role legitimacy in health promotion relating to cardiovascular disease (CVD) in Jordan. Taking part in this study is voluntary and is not obligatory; choosing not to take part will not disadvantage you in any way. Before you decide whether you want to take part, it is important for you to understand why the research is being done and what your participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information.

The aim of this study is to explore the role legitimacy of Registered Nurses relating to health promotion and CVD from the perspective of Registered Nurses, doctors and patients in Jordan.

No financial reward will be offered but a summary of the final report will be available to participants on request. Your participation will contribute a great deal to this novel area of research.

You are asked to participate because you are Registered Nurses (male and female) who work in acute care settings departments/ out-patient clinics within hospitals settings (public, private or Royal Medical Services) or a primary healthcare centre. You will receive a questionnaire comprising 10 pages about your knowledge of CVD, your views about health promotion, about roles of different health care personnel and about your personal lifestyle data. This questionnaire will take no more than 20 minutes to complete. Completed questionnaires require to be placed in an envelope which will be available in a special drawer located in the head nurse's office.

Your participation will be confidential and anonymous i.e. no name or number on the questionnaire will make it possible to link information back to you. It will not be possible to withdraw data once the questionnaire has been returned. Your data will only be used in this research study and stored securely. All questionnaires and other printed documents will be stored in a locked cabinet in a secure place (filing cabinet drawers with digital locker) in the researcher's office (1.32 JCMB). Electronic data in word/excel format with a password to open will be saved on a encrypted USB stored together with the printed documents. The researcher, his supervisor and the statistician are the only people who will have access to the collected data. After completion of the study (no longer than 3 years), data will be destroyed.

It is up to you to decide whether to take part or not. If you decide to take part, you are still free to withdraw at any time and without giving a reason. Before completing the questionnaire, you will be asked to consent to the processing of your personal information for the purpose explained above and your submission of completed questionnaire implies consent to participate. All collected information will be treated in accordance with the terms of the Data Protection Act 1998.

Contact Details:

Please contact the primary researcher with any queries about the study.

Primary Researcher: **Mamdouh El-hneiti**

Email: Mamdouh.el-hneiti@kcl.ac.uk

PhD Student

Address: Room 1.32 Florence Nightingale School of Nursing and Midwifery, King's College London.

Phone: +962797777373

If this study has harmed you in any way please contact the primary supervisor

Primary Supervisor: **Professor Alison While**

Email: Alison.while@kcl.ac.uk

Associate Dean (Education & External Affairs)

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Thank you for taking time to read this sheet.

KING'S College LONDON

University of London

Registered Nurse questionnaire

An Exploratory Study of the Registered Nurse's Role in Health Promotion relating to Cardiovascular Disease in Jordan

This questionnaire is part of a PhD study exploring the Registered Nurses' role legitimacy in health promotion relating to cardiovascular disease in Jordan.

Please complete this questionnaire by ticking the box that best represents your answer. If you feel that any of the questions are inappropriate, please do not answer them.

Please use the space provided at the back page if you wish to add more information. All the information provided will remain confidential to the researcher.

Your time to complete this questionnaire is greatly appreciated.

☐ **I do not wish to complete this questionnaire, and am returning it to you uncompleted.**

Section 1: About your knowledge of cardiovascular disease

1. Please tick the box that you think best describes your view about cardiovascular disease in general.

Statements	Correct	Incorrect	Don't know
A person always knows when s/he has heart disease.	☐	☐	☐
A person who smokes is more likely to develop heart disease.	☐	☐	☐
Keeping blood pressure under control will reduce a person's chance of developing heart disease.	☐	☐	☐
A person with high cholesterol level in the blood is more likely to develop heart disease.	☐	☐	☐
Only exercising in a gym or exercise class will lower a person's chance of developing heart disease.	☐	☐	☐
Eating fatty foods does not affect blood the cholesterol level in blood.	☐	☐	☐
A person with diabetes is more likely to develop heart disease.	☐	☐	☐
If a person has a family history of heart disease, s/he is more likely to develop heart disease.	☐	☐	☐
Regular exercise will lower a person's chance of developing heart disease.	☐	☐	☐
A person who stops smoking will lower his/her chance of developing heart disease.	☐	☐	☐
A person with high blood pressure is more likely to develop heart disease.	☐	☐	☐

Statements	Correct	Incorrect	Don't know
If a person's "bad" cholesterol (LDL) is high, s/he is more likely to develop heart disease.	☐	☐	☐
If a person's 'good' cholesterol (HDL) is high. s/he is more likely to develop heart disease	☐	☐	☐
Being overweight increases a person's chance of developing heart disease.	☐	☐	☐
Older persons are the more likely to develop heart disease.	☐	☐	☐
Walking and heavy housework are considered exercise that will help lower a person's chance of developing heart disease.	☐	☐	☐

John et al. (2009)

Section 2: Health promotion

1. Below are statements about responsibilities, perceptions and constraints of Registered Nurses in relation to health promotion. Please tick the box that you think best describes your view.

Responsibilities	Strongly agree	Agree	Disagree	Strongly disagree
The Registered Nurse should be a health advocate, insisting that preventive health is put on the political agenda.	☐	☐	☐	☐
The Registered Nurse should take more responsibility for health promotion.	☐	☐	☐	☐
The Registered Nurse is the most appropriate health personnel to get involved in health promotion.	☐	☐	☐	☐
The Registered Nurse should give priority to acute care rather than health education and counselling.	☐	☐	☐	☐
The Registered Nurse should only provide health promotion counselling if it is requested by the physician.	☐	☐	☐	☐
The patient is totally responsible to promote his/her health.	☐	☐	☐	☐

Perceptions	Strongly Agree	Agree	Disagree	Strongly disagree
The Registered Nurse finds health promotion dull and boring.	☐	☐	☐	☐
The Registered Nurse should not interfere with the patient's life telling him/her to change his/her health related behaviours	☐	☐	☐	☐
The patient's lifestyles is conditioned by his/her culture and environment; there is not much that the Registered Nurse can do to change them	☐	☐	☐	☐
The patient does not take any notice of what the Registered Nurse says about changing lifestyle.	☐	☐	☐	☐
Giving a detailed explanation to the patients about their health-related behaviours (e.g. smoking) tends to worry them rather than reassure them.	☐	☐	☐	☐
Helping the patients to understand how health-related behaviours interfere with health is an important part of the Registered Nurses' duty.	☐	☐	☐	☐
The patient gets annoyed when the Registered Nurse asks him/her about health-related behaviours.	☐	☐	☐	☐
The evidence on changing health-related behaviours is too uncertain and contradictory for the Registered Nurse to counsel patients.	☐	☐	☐	☐
Patients find health promotion dull and boring.	☐	☐	☐	☐

Constraints	Strongly Agree	Agree	Disagree	Strongly disagree
Registered Nurses do not have enough time to carry out health promotion.	☐	☐	☐	☐
Registered Nurses do not have the necessary skills to promote health.	☐	☐	☐	☐

Constraints	Strongly Agree	Agree	Disagree	Strongly disagree
Registered Nurses do not speak the patient's language to be able to promote health.	☐	☐	☐	☐
Registered Nurses have very limited knowledge about patient's culture to be able to promote health.	☐	☐	☐	☐

Aldossary (2010)

Section 3: Health promotion and cardiovascular disease

1. To what extent do you **agree** or **disagree** with the following statements about Registered Nurses' health promotion activities in relation to cardiovascular disease. Please tick in the box which best describes your view.

Statements	Strongly Agree	Agree	Disagree	Strongly disagree
Promoting smoking cessation is important in nursing practice.	☐	☐	☐	☐
The Registered Nurse has sufficient knowledge to counsel patients to quit smoking and about the consequences of continued smoking.	☐	☐	☐	☐
The Registered Nurse should only counsel patients to quit smoking if linked with their presenting health problems.	☐	☐	☐	☐
The Registered Nurse should encourage as many patients as possible to quit smoking and provide information about the benefits of quitting smoking.	☐	☐	☐	☐
The Registered Nurse should discuss smoking cessation only if the patient mentions it.	☐	☐	☐	☐
Promoting physical activity is important in nursing practice.	☐	☐	☐	☐
The Registered Nurse has sufficient knowledge to counsel patients about physical activity.	☐	☐	☐	☐

Statements	Strongly Agree	Agree	Disagree	Strongly disagree
The Registered Nurse should only counsel patients about physical activity if linked with their presenting health problems.	☐	☐	☐	☐
The Registered Nurse should encourage as many patients to increase their physical activity and provide information about its benefits.	☐	☐	☐	☐
The Registered Nurse should discuss physical activity only if the patient mentions it.	☐	☐	☐	☐
Promoting weight management is important in nursing practice.	☐	☐	☐	☐
The Registered Nurse has sufficient knowledge to counsel patients about weight management.	☐	☐	☐	☐
The Registered Nurse should only counsel patients about weight management if linked with their presenting health problems.	☐	☐	☐	☐
The Registered Nurse should encourage as many patients to control their weight (for example by reducing dietary fat, increase water intake and increase consumption of fruits and vegetables).	☐	☐	☐	☐
The Registered Nurse should discuss weight management only if the patient mentions it.	☐	☐	☐	☐

Aldossary (2010)

2. Please tick the box that best fits your answer in the following questions about your training in health problems.

   a. Have you ever received any training in smoking cessation?

      ☐ Yes ☐ No If yes, please specify what it was?.....

   b. Have you ever received any training in physical activity promotion?

      ☐ Yes ☐ No If yes, please specify what it was?.....

   c. Have you ever received any training in weight management?

      ☐ Yes ☐ No If yes, please specify what it was?.....

Section 4: Your opinions about the roles of different healthcare personnel

1. Please tick the box that you think bests represents your view about the roles of health care personnel.

Statements	**Agree**	**Disagree**	**Don't know**
There is little if any difference between the range of nursing care activities provided by Registered Nurses and practical nurses.	☐	☐	☐
Only doctors should carry out physical assessments of patients.	☐	☐	☐
Only Registered Nurses should discuss prescribed medications with patients (carers) in hospitals.	☐	☐	☐
Only Registered Nurses should give prescribed medications in hospitals.	☐	☐	☐
Doctors should order specific nursing care for (their) patients in hospitals.	☐	☐	☐
Doctors should supervise nursing practice and nurses should do what the doctors tell them.	☐	☐	☐
Registered Nurses can assess the patient's condition effectively and inform the doctors when required.	☐	☐	☐
Only doctors should discuss the diagnosis with the patient.	☐	☐	☐
Registered Nurses should decide independently of doctors what nursing care is appropriate for their patients.	☐	☐	☐
Practical nurses can fully cover the place of a Registered Nurse in his/her absence.	☐	☐	☐
All nursing staff should comfort and reassure patients emotionally.	☐	☐	☐

Statements	Agree	Disagree	Don't know
Only Registered Nurses should give information relating to patient's condition to the family to reduce anxiety.	☐	☐	☐
The patient's family solely provides all the emotional support the patient needs.	☐	☐	☐
In general, Registered Nurses are knowledgeable enough to assess the patient's educational status prior providing information.	☐	☐	☐
In general, Registered Nurses are knowledgeable enough to provide health education relevant to patient's diagnosis and prognosis.	☐	☐	☐
In general, Registered Nurses are knowledgeable enough to consult patient (and family if relevant) regarding planned care.	☐	☐	☐
In general, Registered Nurses are knowledgeable enough to discuss required care with the family if the patient is dependent.	☐	☐	☐
In general, Registered Nurses are able to describe concisely and accurately patient's condition to other health care team members.	☐	☐	☐
Doctors should be responsible for teaching nurses.	☐	☐	☐
Only Registered Nurses should explain forthcoming procedures or investigations to the patient	☐	☐	☐

Fitzpatrick et al. (1997); Shurique (2006)

Section 5: About your lifestyle

1. Please tick the box which applies to your current physical activity?

   a) Physical activity or exercise includes activities such as walking briskly, jogging, cycling, swimming, or any other activity in which the exertion is at least as intense as these activities.

Statements	Yes	No
I am currently physically active.	☐	☐
I intend to become more physically active in the next 6 months.	☐	☐

b) For activity to be regular, it must add up to a total of 30 minutes or more per day and be done at least 5 days per week. For example, you could take one 30-minute walk or take three 10-minute walks for a daily total of 30 minutes.

Statements	Yes	No
I currently engage in regular physical activity.	☐	☐
I have been regularly physically active for the past 6 months.	☐	☐

McDowell et al. (1997)

2. Below are statements that relate to ideas about exercise. Please tick in the box which best describes your view.

Statements	Strongly agree	Agree	Disagree	Strongly Disagree
Exercising takes too much of my time.	☐	☐	☐	☐
Exercise tires me.	☐	☐	☐	☐
Places for me to exercise are too far away.	☐	☐	☐	☐
I am too embarrassed to exercise.	☐	☐	☐	☐
It costs too much to exercise.	☐	☐	☐	☐
Exercise facilities do not have convenient schedules for me.	☐	☐	☐	☐
I am fatigued by exercise.	☐	☐	☐	☐
My partner (or significant other) does not encourage exercising.	☐	☐	☐	☐

Statements	Strongly agree	Agree	Disagree	Strongly Disagree
Exercise takes too much time from family relationships.	☐	☐	☐	☐
I think people in exercise clothes look funny.	☐	☐	☐	☐
My family members do not encourage me to exercise.	☐	☐	☐	☐
Exercise takes too much time from my family responsibilities.	☐	☐	☐	☐
Exercise is hard work for me.	☐	☐	☐	☐
There are too few places for me to exercise.	☐	☐	☐	☐

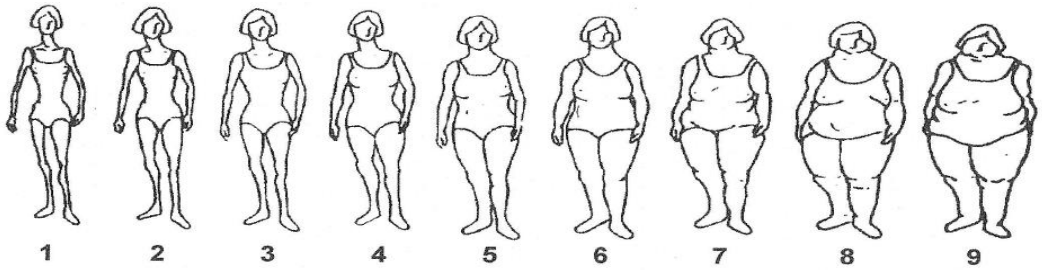
Sechrist et al. (1987)

3. Do you have any long term health problems that limit your physical activity?

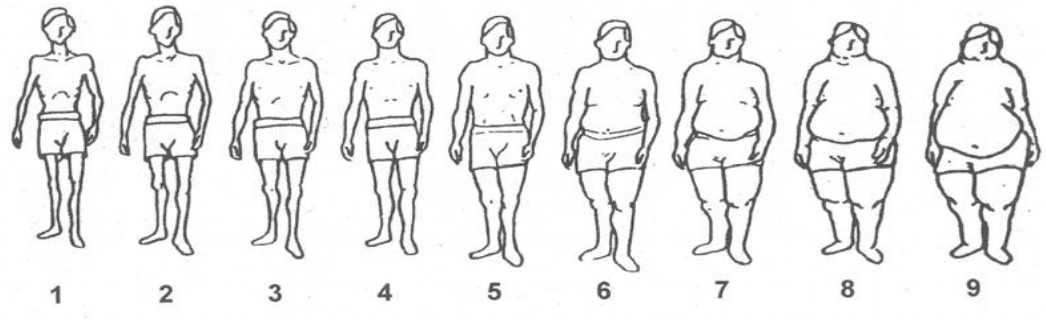
☐ Yes ☐ No If yes, please specify:.....

4. Which figure best depicts your **actual body** shape? If you are currently pregnant, please choose based on your pre-pregnancy shape. Please circle the number of the figure that best represents your idea.

a) If you are a woman:

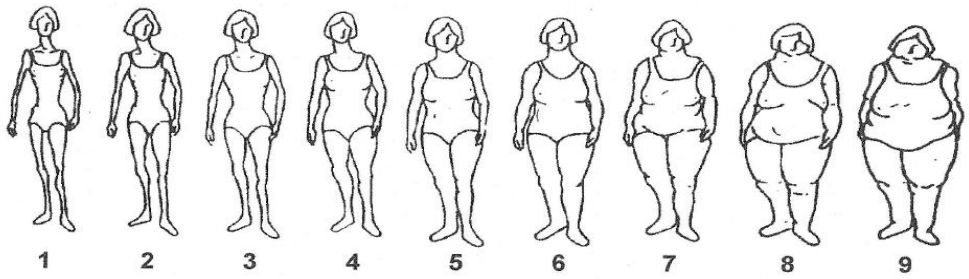


b) If you are a man:

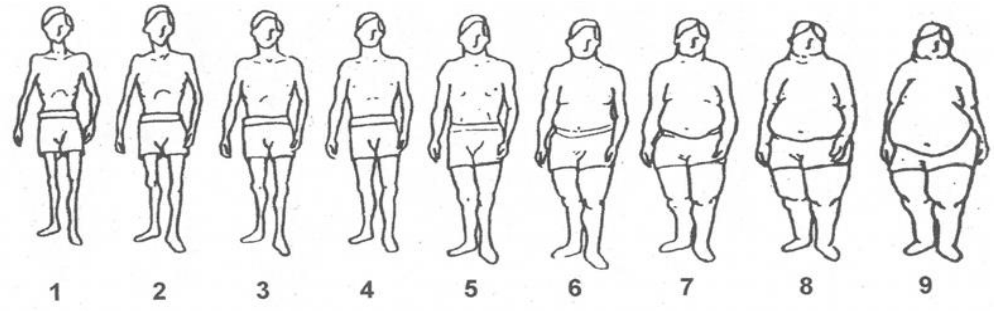


5. Which figure best depicts your **desired** body shape? Please circle the number of the figure that best represents your idea?

a) If you are a woman:



b) If you are a man:



Greenleaf et al. (2004)

6. Have you ever smoked cigarettes/water-pipes regularly?

☐ Yes ☐ No

If yes, please specify when it was and for how long? .....

7. Are you currently smoking cigarettes/water-pipe regularly?

☐ Yes ☐ No

If yes, please specifies how many cigarettes/water-pipes per day?.....

8. How would you describe your health status in general?

☐ Very Good ☐ Good ☐ Poor ☐ Very poor

Section 6: Personal information

1. Please tick the box that best fits your answer in the following questions:

a) What is your gender? ☐ Male ☐ Female

b) What is your nationality? ☐ Jordanian ☐ Non-Jordanian

Please specify.....

c) When did you register as a nurse?.....

d) What is your age group?

☐ 20 - 29 years ☐ 30 - 39 years ☐ 40 - 49 years ☐ 50 years and over

e) What is your highest educational qualification?

☐ PhD ☐ MSc ☐ BSN ☐ Other

Please specify.....

f) Where did you receive your initial training as a nurse? ☐ Jordan ☐ Other

Please specify.....

g) Where are you working now?

☐ Medical Wards ☐ Surgical Wards ☐ Outpatient Departments

☐ Healthcare centre

h) Which healthcare sector are you working now?

☐ Public Sector ☐ Private Sector ☐ Royal Medical Services

☐ I consent to the processing of my personal information for the purpose explained to me. I understand that such information will be treated in accordance with the terms of the Data Protection Act 1998.

Is there anything that you would like to tell me about the topic?

Thank you very much for taking time to complete this questionnaire.

For more information or any question about this research, please contact:

Mamdouh El-hneiti

Doctoral Research Student

King's College London, UK

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KING'S College LONDON

University of London

INFORMATION SHEET FOR PARTICIPANTS (Doctors)

REC Reference Number: PNM/11/12-97

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEET

An Exploratory Study of the Registered Nurse's Role in Health Promotion relating to Cardiovascular Disease in Jordan

We would like to invite you to participate in this original research project about the Registered Nurses' role legitimacy in health promotion relating to cardiovascular disease (CVD) in Jordan. Taking part in this study is voluntary and is not obligatory; choosing not to take part will not disadvantage you in any way. Before you decide whether you want to take part, it is important for you to understand why the research is being done and what your participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information.

The aim of this study is to explore the role legitimacy of Registered Nurses relating to health promotion and CVD from the perspective of Registered Nurses, doctors and patients in Jordan.

No financial reward will be offered but a summary of the final report will be available to participants on request. Your participation will contribute a great deal to this novel area of research.

You are asked to participate because you are general residents/ specialist doctors (male and female) who work in an acute care setting departments/ out-patient clinics, within hospitals settings (public, private or Royal Medical Services) or a primary healthcare centre. You will receive a questionnaire comprising 10 pages about your views about health promotion by nurses, about your views on health promotion by nurses and CVD, about roles of different health care personnel and about your personal lifestyle data. This questionnaire will take no more than 20 minutes to complete. Completed questionnaires require to be placed in an envelope which will be available in a special drawer located in the department secretary's office.

Your participation will be confidential and anonymous i.e. no name or number on the questionnaire will make it possible to link information back to you. It will not be possible to withdraw data once the questionnaire has been returned. Your data will only be used in this research study and stored securely. All questionnaires and other printed documents will be stored in a locked cabinet in a secure place (filing cabinet drawers with digital locker) in the researcher's office (1.32 JCMB). Electronic data in word/excel format with a password to open will be saved on an encrypted USB stored together with the printed documents. The researcher, his supervisor and the statistician are the only people who will have access to the collected data. After completion of the study (no longer than 3 years), data will be destroyed.

It is up to you to decide whether to take part or not. If you decide to take part, you are still free to withdraw at any time and without giving a reason. Before completing the questionnaire, you will be asked to consent to the processing of your personal information for the purpose explained above and your submission of completed questionnaire implies consent to participate. All collected information will be treated in accordance with the terms of the Data Protection Act 1998

Contact Details:

Please contact the primary researcher with any queries about the study.

Primary Researcher: **Mamdouh El-hneiti**

Email: Mamdouh.el-hneiti@kcl.ac.uk

PhD Student

Address: Room 1.32 Florence Nightingale School of Nursing and Midwifery, King's College London.

Phone: +962797777373

If this study has harmed you in any way please contact the primary supervisor

Primary Supervisor: **Professor Alison While**

Email: Alison.while@kcl.ac.uk

Associate Dean (Education & External Affairs)

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Phone: +44 (0) 207 848 3022

Thank you for taking time to read this sheet.

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Doctor questionnaire

An Exploratory Study of the Registered Nurse's Role in Health Promotion relating to Cardiovascular Disease in Jordan

This questionnaire is part of a PhD study exploring the Registered Nurses' role legitimacy in health promotion relating to cardiovascular disease (heart disease) in Jordan.

Please complete this questionnaire by ticking the box that best represents your answer. If you feel that any of the questions are inappropriate, please do not answer them.

Please use the space provided at the back page if you wish to add more information. All the information provided will remain confidential to the researcher.

Your time to complete this questionnaire is greatly appreciated.

☐ **I do not wish to complete this questionnaire, and am returning it to you uncompleted.**

Section 1: Health promotion

1. Below are statements about responsibilities, perceptions and constraints of Registered Nurses in relation to health promotion. Please tick the box that you think best describes your view.

Responsibilities	**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**
The Registered Nurse should be a health advocate, insisting that preventive health is put on the political agenda.	☐	☐	☐	☐
The Registered Nurse should take more responsibility for health promotion.	☐	☐	☐	☐
The Registered Nurse is the most appropriate health personnel to get involved in health promotion.	☐	☐	☐	☐
The Registered Nurse should give priority to acute care rather than health education and counselling.	☐	☐	☐	☐
The Registered Nurse should only provide health promotion counselling if it is requested by the physician.	☐	☐	☐	☐

Perceptions	**Strongly Agree**	**Agree**	**Disagree**	**Strongly disagree**
The patient is totally responsible to promote his/her health.	☐	☐	☐	☐
The Registered Nurse finds health promotion dull and boring.	☐	☐	☐	☐
The Registered Nurse should not interfere with the patient's life telling him/her to change his/her health related behaviours	☐	☐	☐	☐
The patient's lifestyles is conditioned by his/her culture and environment; there is not much that the Registered Nurse can do to change them	☐	☐	☐	☐
The patient does not take any notice of what the Registered Nurse says about changing lifestyle.	☐	☐	☐	☐

Perceptions	Strongly Agree	Agree	Disagree	Strongly disagree
Giving a detailed explanation to the patients about their health-related behaviours (e.g. smoking) tends to worry them rather than reassure them.	☐	☐	☐	☐
Helping the patients to understand how health-related behaviours interfere with health is an important part of the Registered Nurses' duty.	☐	☐	☐	☐
The patient gets annoyed when the Registered Nurse asks him/her about health-related behaviours.	☐	☐	☐	☐
The evidence on changing health-related behaviours is too uncertain and contradictory for the Registered Nurse to counsel patients.	☐	☐	☐	☐

Aldossary (2010)

Constraints	Strongly Agree	Agree	Disagree	Strongly disagree
Registered Nurses do not have enough time to carry out health promotion.	☐	☐	☐	☐
Registered Nurses do not have the necessary skills to promote health.	☐	☐	☐	☐
Registered Nurses do not speak the patient's language to be able to promote health.	☐	☐	☐	☐
Registered Nurses have very limited knowledge about patient's culture to be able to promote health.	☐	☐	☐	☐
Patients find health promotion dull and boring.	☐	☐	☐	☐

Section 2: Health promotion and cardiovascular disease

1. To what extent do you **agree** or **disagree** with the following statements about Registered Nurses' health promotion activities in relation to cardiovascular disease. Please tick in the box which best describes your view.

Statements	Strongly Agree	Agree	Disagree	Strongly disagree
Promoting smoking cessation is important in nursing practice.	☐	☐	☐	☐

Statements	Strongly Agree	Agree	Disagree	Strongly disagree
The Registered Nurse has sufficient knowledge to counsel patients to quit smoking and about the consequences of continued smoking.	☐	☐	☐	☐
The Registered Nurse should only counsel patients to quit smoking if linked with their presenting health problems.	☐	☐	☐	☐
The Registered Nurse should encourage as many patients as possible to quit smoking and provide information about the benefits of quitting smoking.	☐	☐	☐	☐
The Registered Nurse should discuss smoking cessation only if the patient mentions it.	☐	☐	☐	☐
Promoting physical activity is important in nursing practice.	☐	☐	☐	☐
The Registered Nurse has sufficient knowledge to counsel patients about physical activity.	☐	☐	☐	☐
The Registered Nurse should only counsel patients about physical activity if linked with their presenting health problems.	☐	☐	☐	☐
The Registered Nurse should encourage as many patients to increase their physical activity and provide information about its benefits.	☐	☐	☐	☐
The Registered Nurse should discuss physical activity only if the patient mentions it.	☐	☐	☐	☐
Promoting weight management is important in nursing practice.	☐	☐	☐	☐
The Registered Nurse has sufficient knowledge to counsel patients about weight management.	☐	☐	☐	☐
The Registered Nurse should only counsel patients about weight management if linked with their presenting health problems.	☐	☐	☐	☐

Statements	Strongly Agree	Agree	Disagree	Strongly disagree
The Registered Nurse should encourage as many patients to control their weight (for example by reducing dietary fat, increase water intake and increase consumption of fruits and vegetables).	☐	☐	☐	☐
The Registered Nurse should discuss weight management only if the patient mentions it.	☐	☐	☐	☐

Aldossary (2010)

Section 3: Your opinions about the roles of different healthcare personnel

1. Please tick the box that you think bests represents your view about the roles of health care personnel.

Statements	Agree	Disagree	Don't know
There is little if any difference between the range of nursing care activities provided by Registered Nurses and practical nurses.	☐	☐	☐
Only doctors should carry out physical assessments of patients.	☐	☐	☐
Only Registered Nurses should discuss prescribed medications with patients (carers) in hospitals.	☐	☐	☐
Only Registered Nurses should give prescribed medications in hospitals.	☐	☐	☐
Doctors should order specific nursing care for (their) patients in hospitals.	☐	☐	☐
Doctors should supervise nursing practice and nurses should do what the doctors tell them.	☐	☐	☐
Registered Nurses can assess the patient's condition effectively and inform the doctors when required.	☐	☐	☐
Only doctors should discuss the diagnosis with the patient.	☐	☐	☐

Statements	Agree	Disagree	Don't know
Registered Nurses should decide independently of doctors what nursing care is appropriate for their patients.	☐	☐	☐
Practical nurses can fully cover the place of a Registered Nurse in his/her absence.	☐	☐	☐
All nursing staff should comfort and reassure patients emotionally.	☐	☐	☐
Only Registered Nurses should give information relating to patient's condition to the family to reduce anxiety.	☐	☐	☐
The patient's family solely provides all the emotional support the patient needs.	☐	☐	☐
In general, Registered Nurses are knowledgeable enough to assess the patient's educational status prior providing information.	☐	☐	☐
In general, Registered Nurses are knowledgeable enough to provide health education relevant to patient's diagnosis and prognosis.	☐	☐	☐
In general, Registered Nurses are knowledgeable enough to consult patient (and family if relevant) regarding planned care.	☐	☐	☐
In general, Registered Nurses are knowledgeable enough to discuss required care with the family if the patient is dependent.	☐	☐	☐
In general, Registered Nurses are able to describe concisely and accurately patient's condition to other health care team members.	☐	☐	☐
Doctors should be responsible for teaching nurses.	☐	☐	☐
Only Registered Nurses should explain forthcoming procedures or investigations to the patient	☐	☐	☐

Fitzpatrick et al. (1997); Shurique (2006)

Section 4: About your lifestyle

1. Please tick the box which applies to your current physical activity?

c) Physical activity or exercise includes activities such as walking briskly, jogging, cycling, swimming, or any other activity in which the exertion is at least as intense as these activities.

Statements	**Yes**	**No**
I am currently physically active.	☐	☐
I intend to become more physically active in the next 6 months.	☐	☐

d) For activity to be regular, it must add up to a total of 30 minutes or more per day and be done at least 5 days per week. For example, you could take one 30-minute walk or take three 10-minute walks for a daily total of 30 minutes.

Statements	**Yes**	**No**
I currently engage in regular physical activity.	☐	☐
I have been regularly physically active for the past 6 months.	☐	☐

McDowell et al. (1997)

2. Below are statements that relate to ideas about exercise. Please tick in the box which best describes your view.

Statements	**Strongly agree**	**Agree**	**Disagree**	**Strongly Disagree**
Exercising takes too much of my time.	☐	☐	☐	☐
Exercise tires me.	☐	☐	☐	☐
Places for me to exercise are too far away.	☐	☐	☐	☐
I am too embarrassed to exercise.	☐	☐	☐	☐

Statements	Strongly agree	Agree	Disagree	Strongly Disagree
It costs too much to exercise.	☐	☐	☐	☐
Exercise facilities do not have convenient schedules for me.	☐	☐	☐	☐
I am fatigued by exercise.	☐	☐	☐	☐
My partner (or significant other) does not encourage exercising.	☐	☐	☐	☐
Exercise takes too much time from family relationships.	☐	☐	☐	☐
I think people in exercise clothes look funny.	☐	☐	☐	☐
My family members do not encourage me to exercise.	☐	☐	☐	☐
Exercise takes too much time from my family responsibilities.	☐	☐	☐	☐
Exercise is hard work for me.	☐	☐	☐	☐
There are too few places for me to exercise.	☐	☐	☐	☐

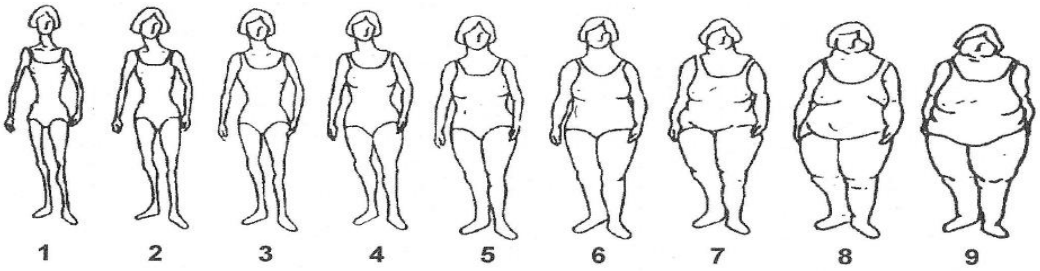
Sechrist et al. (1987)

3. Do you have any long term health problems that limit your physical activity?

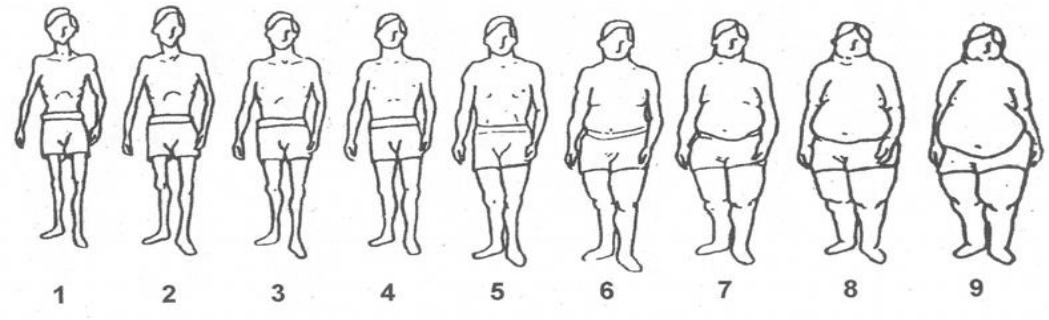
☐ Yes ☐ No If yes, please specify:.....

4. Which figure best depicts your **actual body** shape? If you are currently pregnant, please choose based on your pre-pregnancy shape. Please circle the number of the figure that best represents your idea.

c) If you are a woman:

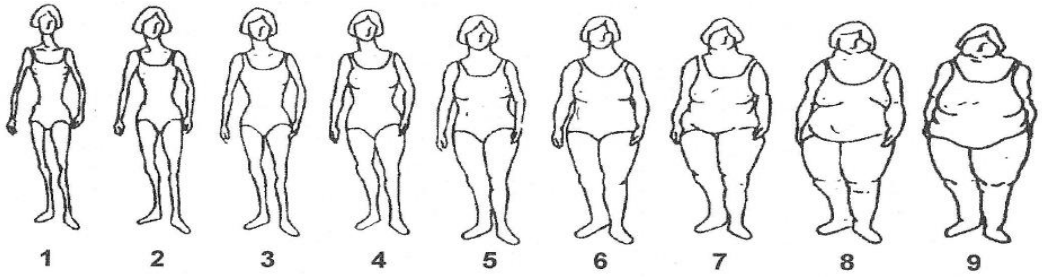


d) If you are a man:

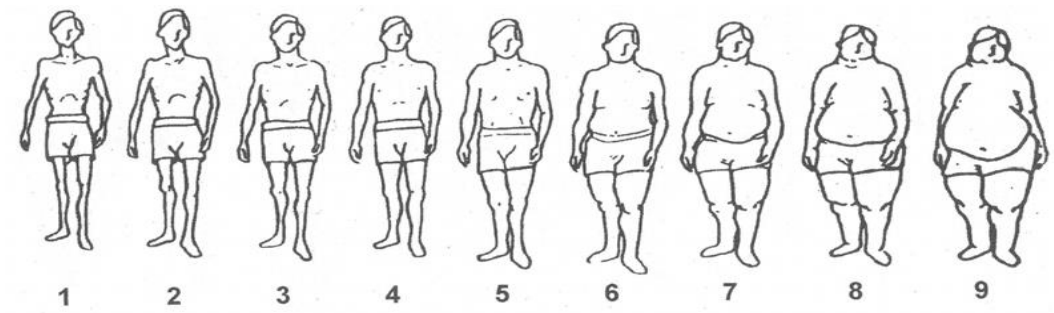


5. Which figure best depicts your **desired** body shape? Please circle the number of the figure that best represents your idea?

c) If you are a woman：



d) If you are a man:



Greenleaf et al. (2004)

6. Have you ever smoked cigarettes/water-pipes regularly?

☐ Yes ☐ No

If yes, please specify when it was and for how long? .....

7. Are you currently smoking cigarettes/water-pipe regularly?

☐ Yes ☐ No

If yes, please specifies how many cigarettes/water-pipes per day?.....

8. How would you describe your health status in general?

☐ Very Good ☐ Good ☐ Poor ☐ Very poor

Section 5: Personal information

1) What is your gender? ☐ Male ☐ Female

2) What is your nationality? ☐ Jordanian ☐ Non-Jordanian

Please specify.....

3) When did you register as a doctor?.....(years)

4) What is your age group?

☐ 20 - 29 years ☐ 30 - 39 years ☐ 40 - 49 years ☐ 50 years and over

5) Are you?

☐ Resident ☐ Specialist ☐ Registrar ☐ Consultant

State specilaity:.....

6) Where did you receive your qualify in medicine? Jordan O☐ ☐

Please specify.....

7) If you are a specialist/consultant, did you train abroad as part of your training?

☐ Yes ☐ No If yes, please specify the country……..

8) Which healthcare sector are you working in now?

☐ Public Sector ☐ Private Sector ☐ Royal Medical Services

☐ I consent to the processing of my personal information for the purpose explained to me, I understand that such information will be treated in accordance with the terms of the Data Protection Act 1998.

Is there anything that you would like to tell me about the topic?

Thank you very much for taking time to complete this questionnaire.

For more information or any question about this research, please contact:

Mamdouh El-hneiti

Doctoral Research Student

King's College London, UK

Tel: +96 2(0) 797 777 373

Email: mamdouh.el-hneiti@kcl.ac.uk

KING'S College LONDON

University of London

INFORMATION SHEET FOR PARTICIPANTS (Patients)

REC Reference Number: PNM/11/12-97

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEET

An Exploratory Study of the Registered Nurse's Role in Health Promotion relating to Cardiovascular Disease in Jordan

We would like to invite you to participate in this original research project about the Registered Nurses' role legitimacy in health promotion relating to cardiovascular disease (CVD) in Jordan. Taking part in this study is voluntary and is not obligatory; choosing not to take part will not disadvantage you in any way or affect your right to treatment. Before you decide whether you want to take part, it is important for you to understand why the research is being done and what your participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information.

The aim of this study is to explore the role legitimacy of Registered Nurses in health promotion relating to CVD from the perspective of Registered Nurses, doctors and patients in Jordan.

No financial reward will be offered but a summary of the final report will be available to participants on request. Your participation will contribute a great deal to this novel area of research.

You are asked to participate because you are a patient (male or female) who admitted to a hospital setting (public, private or Royal Medical Services) or a primary healthcare centre. You will receive a questionnaire comprising 10 pages about your views of health promotion by nurses, about your views of health promotion by nurses and CVD, about roles of different health care personnel and about your personal lifestyle data. This questionnaire will take no more than 20 minutes to complete and helps to complete questionnaires will be offered on request. Completed questionnaires require to be placed in an envelope which will be available in a special box located in each clinic/department.

Your participation will be confidential and anonymous i.e. no name or number on the questionnaire will make it possible to link information back to you. It will not be possible to withdraw data once the questionnaire has been returned. Your data will only be used in this research study and stored securely. All questionnaires and other printed documents will be stored in a locked cabinet in a secure place (filing cabinet drawers with digital locker) in the researcher's office (1.32 JCMB). Electronic data in word/excel format with a password to open will be saved on an encrypted USB stored together with the printed documents. The researcher, his supervisor and the statistician are the only people who will have access to the collected data. After completion of the study (no longer than 3 years), data will be destroyed.

It is up to you to decide whether to take part or not. If you decide to take part, you are still free to withdraw at any time and without giving a reason. Before completing the questionnaire, you will be asked to consent to the processing of your personal information for the purpose explained above and your submission of completed questionnaire implies consent to participate. All collected information will be treated in accordance with the terms of the Data Protection Act 1998.

Contact Details:

Please contact the primary researcher with any queries about the study.

Primary Researcher: **Mamdouh El-hneiti**

Email: Mamdouh.el-hneiti@kcl.ac.uk

PhD Student

Address: Room 1.32 Florence Nightingale School of Nursing and Midwifery, King's College London.

Phone: +962797777373

If this study has harmed you in any way please contact the primary supervisor

Primary Supervisor: **Professor Alison While**

Email: Alison.while@kcl.ac.uk

Associate Dean (Education & External Affairs)

Address: James Clerk Maxwell Building, 57 Waterloo Road, London, SE1 8WA.

Phone: +44 (0) 207 848 3022

Thank you for taking time to read this sheet

KING'S College LONDON

University of London

Patient questionnaire

An Exploratory Study of the Registered Nurse's Role in Health Promotion relating to Cardiovascular Disease in Jordan

This questionnaire is part of a PhD study exploring the Registered Nurses' role legitimacy in health promotion relating to cardiovascular disease (heart disease) in Jordan.

Please complete this questionnaire by ticking the box that best represents your answer. If you feel that any of the questions are inappropriate, please do not answer them.

Please use the space provided at the back page if you wish to add more information. All the information provided will remain confidential to the researcher.

Your time to complete this questionnaire is greatly appreciated.

☐ **I do not wish to complete this questionnaire, and am returning it to you uncompleted**

Section 1: Health promotion

1. Below are statements about responsibilities, perceptions and constraints of Registered Nurses in relation to health promotion. Please tick the box that you think best describes your view.

Responsibilities	**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**
The Registered Nurse should be a health advocate, insisting that preventive health is put on the political agenda.	☐	☐	☐	☐
The Registered Nurse should take more responsibility for health promotion.	☐	☐	☐	☐
The Registered Nurse is the most appropriate health personnel to get involved in health promotion.	☐	☐	☐	☐
The Registered Nurse should give priority to acute care rather than health education and counselling.	☐	☐	☐	☐
The Registered Nurse should only provide health promotion counselling if it is requested by the physician.	☐	☐	☐	☐

Perceptions	**Strongly Agree**	**Agree**	**Disagree**	**Strongly disagree**
The patient is totally responsible to promote his/her health.	☐	☐	☐	☐
The Registered Nurse finds health promotion dull and boring.	☐	☐	☐	☐
The Registered Nurse should not interfere with the patient's life telling him/her to change his/her health related behaviours	☐	☐	☐	☐
The patient's lifestyles is conditioned by his/her culture and environment; there is not much that the Registered Nurse can do to change them	☐	☐	☐	☐
The patient does not take any notice of what the Registered Nurse says about changing lifestyle.	☐	☐	☐	☐

Perceptions	Strongly Agree	Agree	Disagree	Strongly disagree
Giving a detailed explanation to the patients about their health-related behaviours (e.g. smoking) tends to worry them rather than reassure them.	☐	☐	☐	☐
Helping the patients to understand how health-related behaviours interfere with health is an important part of the Registered Nurses' duty.	☐	☐	☐	☐
The patient gets annoyed when the Registered Nurse asks him/her about health-related behaviours.	☐	☐	☐	☐
The evidence on changing health-related behaviours is too uncertain and contradictory for the Registered Nurse to counsel patients.	☐	☐	☐	☐

Constraints	Strongly Agree	Agree	Disagree	Strongly disagree
Registered Nurses do not have enough time to carry out health promotion.	☐	☐	☐	☐
Registered Nurses do not have the necessary skills to promote health.	☐	☐	☐	☐
Registered Nurses do not speak the patient's language to be able to promote health.	☐	☐	☐	☐
Registered Nurses have very limited knowledge about patient's culture to be able to promote health.	☐	☐	☐	☐
Patients find health promotion dull and boring.	☐	☐	☐	☐

Aldossary (2010)

Section 2: Health promotion and cardiovascular disease

2. To what extent do you **agree** or **disagree** with the following statements about Registered Nurses' health promotion activities in relation to cardiovascular disease. Please tick in the box which best describes your view.

Statements	Strongly Agree	Agree	Disagree	Strongly disagree
Promoting smoking cessation is important in nursing practice.	☐	☐	☐	☐

Statements	Strongly Agree	Agree	Disagree	Strongly disagree
The Registered Nurse has sufficient knowledge to counsel patients to quit smoking and about the consequences of continued smoking.	☐	☐	☐	☐
The Registered Nurse should only counsel patients to quit smoking if linked with their presenting health problems.	☐	☐	☐	☐
The Registered Nurse should encourage as many patients as possible to quit smoking and provide information about the benefits of quitting smoking.	☐	☐	☐	☐
The Registered Nurse should discuss smoking cessation only if the patient mentions it.	☐	☐	☐	☐
Promoting physical activity is important in nursing practice.	☐	☐	☐	☐
The Registered Nurse has sufficient knowledge to counsel patients about physical activity.	☐	☐	☐	☐
The Registered Nurse should only counsel patients about physical activity if linked with their presenting health problems.	☐	☐	☐	☐
The Registered Nurse should encourage as many patients to increase their physical activity and provide information about its benefits.	☐	☐	☐	☐
The Registered Nurse should discuss physical activity only if the patient mentions it.	☐	☐	☐	☐
Promoting weight management is important in nursing practice.	☐	☐	☐	☐
The Registered Nurse has sufficient knowledge to counsel patients about weight management.	☐	☐	☐	☐
The Registered Nurse should only counsel patients about weight management if linked with their presenting health problems.	☐	☐	☐	☐

Statements	Strongly Agree	Agree	Disagree	Strongly disagree
The Registered Nurse should encourage as many patients to control their weight (for example by reducing dietary fat, increase water intake and increase consumption of fruits and vegetables).	☐	☐	☐	☐
The Registered Nurse should discuss weight management only if the patient mentions it.	☐	☐	☐	☐

Aldossary (2010)

Section 3: Your opinions about the roles of different healthcare personnel

1. Please tick the box that you think bests represents your view about the roles of health care personnel.

Statements	Agree	Disagree	Don't know
There is little if any difference between the range of nursing care activities provided by Registered Nurses and practical nurses.	☐	☐	☐
Only doctors should carry out physical assessments of patients.	☐	☐	☐
Only Registered Nurses should discuss prescribed medications with patients (carers) in hospitals.	☐	☐	☐
Only Registered Nurses should give prescribed medications in hospitals.	☐	☐	☐
Doctors should order specific nursing care for (their) patients in hospitals.	☐	☐	☐
Doctors should supervise nursing practice and nurses should do what the doctors tell them.	☐	☐	☐
Registered Nurses can assess the patient's condition effectively and inform the doctors when required.	☐	☐	☐
Only doctors should discuss the diagnosis with the patient.	☐	☐	☐

Statements	Agree	Disagree	Don't know
Registered Nurses should decide independently of doctors what nursing care is appropriate for their patients.	☐	☐	☐
Practical nurses can fully cover the place of a Registered Nurse in his/her absence.	☐	☐	☐
All nursing staff should comfort and reassure patients emotionally.	☐	☐	☐
Only Registered Nurses should give information relating to patient's condition to the family to reduce anxiety.	☐	☐	☐
The patient's family solely provides all the emotional support the patient needs.	☐	☐	☐
In general, Registered Nurses are knowledgeable enough to assess the patient's educational status prior providing information.	☐	☐	☐
In general, Registered Nurses are knowledgeable enough to provide health education relevant to patient's diagnosis and prognosis.	☐	☐	☐
In general, Registered Nurses are knowledgeable enough to consult patient (and family if relevant) regarding planned care.	☐	☐	☐
In general, Registered Nurses are knowledgeable enough to discuss required care with the family if the patient is dependent.	☐	☐	☐
In general, Registered Nurses are able to describe concisely and accurately patient's condition to other health care team members.	☐	☐	☐
Doctors should be responsible for teaching nurses.	☐	☐	☐
Only Registered Nurses should explain forthcoming procedures or investigations to the patient	☐	☐	☐

Fitzpatrick et al. (1997); Shurique (2006)

Section 4: About your lifestyle

1. Please tick the box which applies to your current physical activity?

a) Physical activity or exercise includes activities such as walking briskly, jogging, cycling, swimming, or any other activity in which the exertion is at least as intense as these activities.

Statements	Yes	No
I am currently physically active.	☐	☐
I intend to become more physically active in the next 6 months.	☐	☐

b) For activity to be regular, it must add up to a total of 30 minutes or more per day and be done at least 5 days per week. For example, you could take one 30-minute walk or take three 10-minute walks for a daily total of 30 minutes.

Statements	Yes	No
I currently engage in regular physical activity.	☐	☐
I have been regularly physically active for the past 6 months.	☐	☐

McDowell et al. (1997)

2. Below are statements that relate to ideas about exercise. Please tick in the box which best describes your view.

Statements	Strongly agree	Agree	Disagree	Strongly Disagree
Exercising takes too much of my time.	☐	☐	☐	☐
Exercise tires me.	☐	☐	☐	☐
Places for me to exercise are too far away.	☐	☐	☐	☐
I am too embarrassed to exercise.	☐	☐	☐	☐

Statements	Strongly agree	Agree	Disagree	Strongly Disagree
It costs too much to exercise.	☐	☐	☐	☐
Exercise facilities do not have convenient schedules for me.	☐	☐	☐	☐
I am fatigued by exercise.	☐	☐	☐	☐
My partner (or significant other) does not encourage exercising.	☐	☐	☐	☐
Exercise takes too much time from family relationships.	☐	☐	☐	☐
I think people in exercise clothes look funny.	☐	☐	☐	☐
My family members do not encourage me to exercise.	☐	☐	☐	☐
Exercise takes too much time from my family responsibilities.	☐	☐	☐	☐
Exercise is hard work for me.	☐	☐	☐	☐
There are too few places for me to exercise.	☐	☐	☐	☐

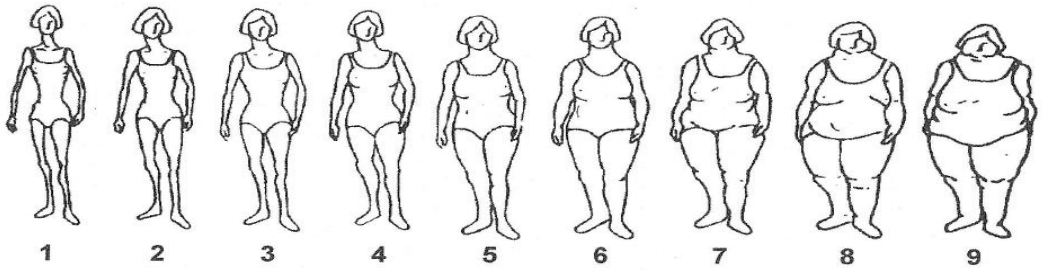
Sechrist et al. (1987)

3. Do you have any long term health problems that limit your physical activity?

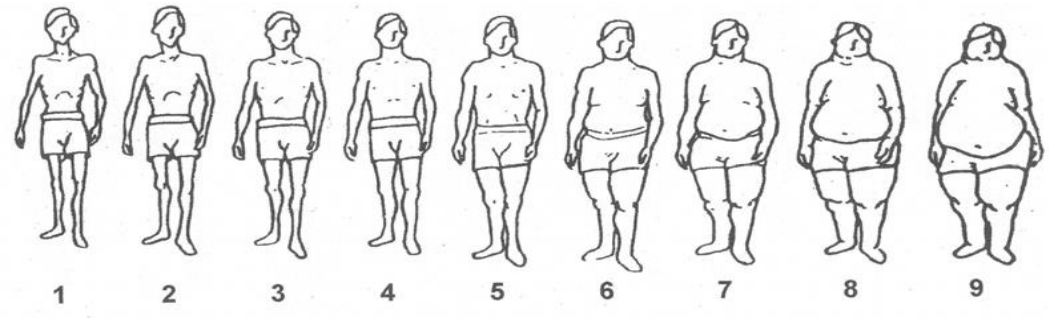
☐ Yes ☐ No If yes, please specify:.....

4. Which figure best depicts your **actual body** shape? If you are currently pregnant, please choose based on your pre-pregnancy shape. Please circle the number of the figure that best represents your idea.

a) If you are a woman:

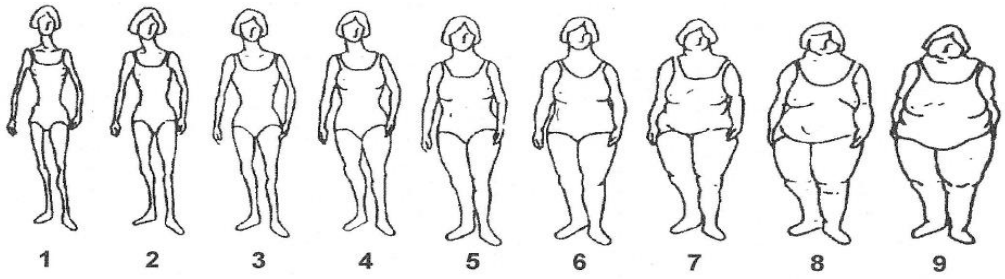


b) If you are a man:

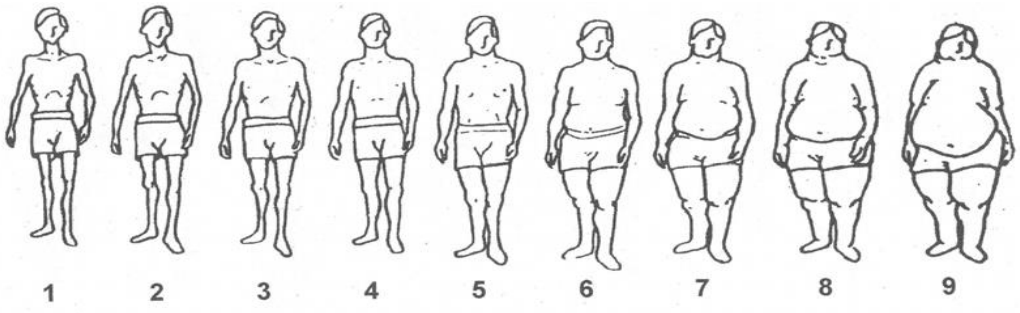


5. Which figure best depicts your **desired** body shape? Please circle the number of the figure that best represents your idea?

a) If you are a woman：



b) If you are a man:



Greenleaf et al. (2004)

6. Have you ever smoked cigarettes/water-pipes regularly?

☐ Yes ☐ No

If yes, please specify when it was and for how long? .....

7. Are you currently smoking cigarettes/water-pipe regularly?

☐ Yes ☐ No

If yes, please specifies how many cigarettes/water-pipes per day?.....

8. How would you describe your health status in general?

☐ Very Good ☐ Good ☐ Poor ☐ Very poor

Section 5: Personal information

1. What is your gender? ☐ Male ☐ Female
2. What is your nationality? ☐ Jordanian ☐ Non-Jordanian

Please specify.....

3. What is your age group?

☐ 20 - 29 years ☐ 30 - 39 years ☐ 40 - 49 years ☐ 50 years and over

4. What is the highest grade you reached in your education?

☐ Illiterate ☐ Primary school ☐ Secondary school ☐ High school

☐ College or higher

5. Have you had or do you have heart disease?

☐ Yes ☐ No If yes, please specify.....

6. What is your marital status?

☐ Single ☐ Married ☐ Widowed ☐ Divorced

7. Are you employed?

☐ Yes ☐ No If yes, please specify current job.....

☐ I consent to the processing of my personal information for the purpose explained to me, I understand that such information will be treated in accordance with the terms of the Data Protection Act 1998.

Is there anything that you would like to tell me about the topic?

Thank you very much for taking time to complete this questionnaire.

For more information or any question about this research, please contact:

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University of London

ورقة معلومات للممرض القانوني

رمز ملف اللجنة الأخلاقية : PNM/11/12-97

دور الممرض القانوني في مجال الارتقاء بالرعاية الصحية وأمراض القلب والشرايين في الأردن

أود أن أدعوكم إلى المشاركة في هذا المشروع البحثي للدراسات العليا حول دور الممرضين في مجال الارتقاء بالرعاية الصحية وأمراض القلب والشرايين في الأردن. المشاركة في هذه الدراسة هي تطوعي واختيار عدم المشاركة لن يؤثر عليك بأي شكل من الأشكال. قبل أن تقرر ما إذا كنت ترغب في المشاركة، من المهم أن تفهم لماذا يجري هذا البحث وكيف ستشارك في هذا البحث.

يرجى أخذ الوقت الكافي لقراءة المعلومات التالية بعناية، ومناقشته مع الآخرين إذا كنت ترغب في ذلك. أرجو الاتصال بنا إذا كان هناك أي شيء غير واضح أو إذا كنت ترغب في المزيد من المعلومات.

هذه الدراسة تهدف إلى استكشاف وجهات نظر الأطباء، الممرضون القانونيون والمرضى عن دور التمريض في مجال تعزيز الصحة والتثقيف الصحي والأمراض القلبية الوعائية (أمراض القلب) في الأردن. ومن المؤمل أن النتائج التي سوف تتوصل إليها الدراسة سوف تساعد على تطوير خدمات التمريض والأدوار المتعلقة بالوقاية والرعاية للمصابين بأمراض القلب والأوعية الدموية في الأردن مما يساهم في حل مشكلة صحية ذات أولوية في الأردن.

لا يوجد مكافأة مالية بل ملخص التقرير النهائي سيكون متاحا للمشتركين بناء على طلبهم.

يطلب منك المشاركة في هذا البحث لأنك ممرض قانوني تعمل في إحدى المستشفيات العامة أو الخاصة أو احد المراكز الصحية أو الخدمات الطبية الملكية. سوف يطلب منك ملأ استبيان حول معرفتك بأمراض

القلب والشرايين و وجهات نظرك بشأن تعزيز الصحة والتثقيف الصحي من قبل التمريض، وأدوار كادر الرعاية الصحية ونمط حياتك (عادات التدخين على سبيل المثال) . هذا الاستبيان لن يستغرق أكثر من ١٥ دقيقة لإكماله.

ارجو وضع الاستبيان بعد تعبئته في المغلف الموجود في غرفة التمريض.

مشاركتكم سوف تكون سرية، لا اسم أو رقم في الاستبيان سوف تجعل من الممكن لربط المعلومات بك لن يكون من الممكن سحب البيانات بعد تسليم الاستبيان.

الأمر متروك لك لتقرر ما إذا كنت ترغب في المشاركة أم لا، إذا قررت المشاركة لا تزال تستطيع الانسحاب في أي وقت ودون إبداء أسباب.

تفاصيل الاتصال:

الرجاء الاتصال مع الباحث الرئيسي على أي استفسار عن الدراسة

الباحث الرئيسي: ممدوح الحنيطي

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طالب دكتوراه

العنوان: كلية فلورنس نايتنجيل للتمريض والقبالة، كنجز كوليج لندن

مبنى جيمس كلارك ماكسويل، ٥٧ شارع ووترلو، لندن

التلفون: ٠٧٩٦٠٦٨٩٨٤

إذا كانت هذه الدراسة قد أضرت بك في أي حال من الأحوال، من فضلك اتصل بالمشرف الرئيسي:

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مساعدة العميد (التعليم والشؤون الخارجية)

العنوان: كلية فلورنس نايتنجيل للتمريض والقبالة، كنجز كوليج لندن

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KING'S College LONDON

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اســـــتبـيان الممرض القانوني

دور الممرض **القانوني** في مجال الارتقاء بالرعاية الصحية وأمراض القلب والشرايين في الأردن

هذا الاستبيان جزء من دراسة دكتوراه تهدف الى إستكشاف دور الممرض المتعلق بالإرتقاء بالرعاية الصحية وأمراض القلب والشرايين في الأردن. أرجو تكملة هذا الإستبيان بإختيار المربع المخصص والذي يمثل أفضل إجاباتك. إذا كنت تشعر بأن أي من الاسئلة ليست مناسبة، الرجاء عدم الاجابة عليها.

الرجاء إستخدام المساحة المتوفرة في الصفحة الأخيرة في حال رغبتك إضافة المزيد من المعلومات. سوف يتم تناول كافة المعلومات المقدمة من قبلك بسرية تامة ولن يطلع عليها أحد غير الباحث.

إكمالك لهذا الاستبيان هو موضع تقدير وشكر،،،

☐أنا لا أرغب بتعبئة هذا الاستبيان وبناء عليه أعيده غير مكتمل

الـقـســـــم الأول: <u>معرفتك حول امراض القلب والشرايين</u>

١. يرجى وضع علامة في المربع الذي تعتقد انه يمثل أفضل جواب لرأيك حول معرفتك عن أمراض القلب والأوعية الدموية بشكل عام

العبارات	صحيح	غير صحيح	لا اعرف
يعرف الشخص دائماً إذا كان لديه مرض في القلب	☐	☐	☐
يكون الشخص المدخن (الذي يدخن) أكثر عرضة للإصابة بمرض القلب	☐	☐	☐
الحفاظ على مستوى ضغط الدم يقلل من فرصة إصابة الشخص بمرض القلب	☐	☐	☐
يكون الشخص الذي لديه مستوى الكولسترول مرتفع في الدم أكثر عرضة للإصابة بمرض القلب	☐	☐	☐
وحدها ممارسة الرياضة في النادي أو أخذ دروس رياضية تساعد على تقليل الفرصة من الإصابة بمرض القلب	☐	☐	☐
تناول الأطعمة الدهنية لا يؤثر على مستوى الكولسترول بالدم	☐	☐	☐
يكون الشخص المصاب بالسكري أكثر عرضة للإصابة بمرض القلب	☐	☐	☐
إذا كان الشخص لديه تاريخ عائلي بمرض القلب فإنه يكون أكثر عرضة للإصابة بمرض القلب	☐	☐	☐
تقلل ممارسة الرياضة بشكل منتظم من فرصة إصابة الشخص بمرض القلب	☐	☐	☐
عندما يتوقف الشخص عن التدخين فإن فرصة إصابته بمرض القلب تقل	☐	☐	☐
يكون الشخص الذي لديه ضغط الدم مرتفع أكثر عرضة للإصابة بمرض القلب	☐	☐	☐
الشخص الذي لديه مستوى الكولسترول الضار مرتفع يكون أكثر عرضة للإصابة بمرض القلب	☐	☐	☐

العبارات	صحيح	غير صحيح	لا اعرف
يكون الشخص الذي لديه مستوى الكولسترول الغير ضار مرتفع أكثر عرضة للإصابة بمرض القلب	☐	☐	☐
يزيد الوزن الزائد من فرصة إصابة الشخص بمرض القلب	☐	☐	☐
كبار السن هم أكثر عرضة للإصابة بمرض القلب	☐	☐	☐
المشي والأعمال المنزلية الشاقة تعتبر رياضة وبالتالي تقلل الإصابة بمرض القلب	☐	☐	☐

John et al. (2009)

القسم الثاني: الأرتقاء بالرعاية الصحية

١. في الأسفل عبارات عن مسؤوليات وتصورات وعقبات الممرضون القانونيون المتعلقة بالارتقاء بالرعاية الصحية. يرجى وضع علامة في المربع الذي تعتقد انه يمثل أفضل جواب لرأيك.

المسؤوليات	أوافق بشدة	أوافق	أعارض	أعارض بشدة
يجب على الممرض القانوني أن يكون داعما للصحة، مؤكدا على أن تكون الصحة الوقائية هي عنصر أساسي في السياسة العامة للمجتمع	☐	☐	☐	☐
يجب على الممرض القانوني أن يتحمل مسؤولية اكبر اتجاة التوعية الصحية	☐	☐	☐	☐
الممرض القانوني هو الشخص الأكثر ملائمة للقيام بالتوعية الصحية مقارنة بأعضاء الفريق الصحي الآخرون	☐	☐	☐	☐
يجب أن يعطي الممرض القانوني الأولوية للعناية الصحية الحادة والحرجة للمريض بدلاً من التوعية الصحية	☐	☐	☐	☐
يجب أن يقدم الممرض القانوني التوعية الصحية للمريض فقط إذا طلب الطبيب منه ذلك	☐	☐	☐	☐
المريض هو المسؤول كلياً عن توعية نفسه صحياً	☐	☐	☐	☐

التصورات	أوافق بشدة	أوافق	أعارض	أعارض بشدة
الممرض القانوني يجد أن التوعية الصحية عملية بلا فائدة و مملة	☐	☐	☐	☐
يجب على الممرض القانوني ان لا يتدخل في حياة المريض كتقديم النصح له بتغير السلوكيات المتعلقة بالصحة	☐	☐	☐	☐
نمط معيشة المريض مرتبط بثقافته وبيئته، لذلك لا يوجد الكثير ليقدمه الممرض القانوني لتغيير هذا النمط	☐	☐	☐	☐
لا يسجل المريض اي ملاحظات بما يقوله الممرض القانوني بشأن أهمية تغيير نمط المعيشة لحياة صحية افضل	☐	☐	☐	☐
تقديم تفسير دقيق وتفصيلي للمريض عن حالته الصحية قد يؤدي إلى زيادة قلقه بدلاً من طمأنته	☐	☐	☐	☐
مساعدة المريض في فهم كيفية تداخل السلوكيات المتعلقة بالصحة (كالتدخين مثلا) وكيفية تأثيرها على الصحة يعتبر جزء لا يتجزأ من واجبات الممرض القانوني	☐	☐	☐	☐
ينزعج المريض عندما يسأله الممرض القانوني عن سلوكياته الصحية (كالتدخين مثلا) ولا سيما عندما لا ترتبط بصورة مباشرة بمشكلته الصحية الحالية	☐	☐	☐	☐
الأبحاث المتعلقة في تغيير السلوكيات ذات الصلة بصحة المريض غير مؤكدة ومتناقضة أحيانا بالنسبة للممرض القانوني	☐	☐	☐	☐

العقبات	أوافق بشدة	أوافق	أعارض	أعارض بشدة
ليس لدى الممرض القانوني الوقت الكافي لتقديم التوعية الصحية بفعالية	☐	☐	☐	☐
ليس لدى الممرض القانوني المهارات اللازمة لتقديم التوعية الصحية	☐	☐	☐	☐
لا يتحدث الممرض القانوني لغة المريض كي يتسنى له القدرة على تقديم التوعية الصحية	☐	☐	☐	☐
معرفة الممرض القانوني محدودة جداً فيما يخص ثقافة وبيئة المريض لذا لا يتسنى له القدرة على تقديم التوعية الصحية	☐	☐	☐	☐
المريض يجد أن التوعية الصحية عملية بلا فائدة و مملة	☐	☐	☐	☐

Aldossary (2010)

القسم الثالث : الأرتقاء بالرعاية الصحية وأمراض القلب والشرايين

إلى أي مدى توافق أو لا توافق على العبارات التالية حول أنشطة الممرضون بالأرتقاء بالرعاية الصحية. يرجى وضع علامة في المربع الذي تعتقد انه يمثل أفضل جواب لرأيك.

العبارات	أوافق بشدة	أوافق	أعارض	أعارض بشدة
تشجيع الإقلاع عن التدخين أمراً هاما في ممارسات التمريض	☐	☐	☐	☐
لدى الممرض القانوني معرفة كافية لإرشاد المريض عن الإقلاع عن التدخين وعن المشاكل الناتجة عنه	☐	☐	☐	☐
يجب على الممرض القانوني أن يرشد المريض عن الإقلاع عن التدخين فقط إذا كان هناك علاقة مباشرة بين التدخين وصحة المريض الحالية	☐	☐	☐	☐
يجب على الممرض القانوني تشجيع أكبر قدر ممكن من المرضى للإقلاع عن التدخين	☐	☐	☐	☐

العبارات	أوافق بشدة	أوافق	أعارض	أعارض بشدة
يجب على الممرض القانوني مناقشة الإقلاع عن التدخين مع المريض فقط إذا رغب هو في ذلك	☐	☐	☐	☐
تشجيع ممارسة الرياضة البدنية أمراً هاما في ممارسات التمريض	☐	☐	☐	☐
لدى الممرض القانوني معرفة كافية لإرشاد المريض عن الرياضة البدنية	☐	☐	☐	☐
يجب على الممرض القانوني أن يرشد المريض عن الرياضة البدنية فقط إذا كان هناك علاقة مباشرة بين ممارسة الرياضة البدنية وصحة المريض الحالية	☐	☐	☐	☐
يجب على الممرض القانوني تشجيع أكبر قدر ممكن من المرضى لممارسة الرياضة البدنية	☐	☐	☐	☐
يجب على الممرض القانوني مناقشة الرياضة البدنية مع المريض فقط إذا رغب هو في ذلك	☐	☐	☐	☐
تشجيع التحكم بالوزن يعد أمراً هاما في ممارسات التمريض	☐	☐	☐	☐
لدى الممرض القانوني معرفة كافية لإرشاد المريض عن التحكم بالوزن	☐	☐	☐	☐
يجب على الممرض القانوني أن يرشد المريض عن التحكم بالوزن فقط إذا كان هناك علاقة مباشرة بين الوزن وصحة المريض الحالية	☐	☐	☐	☐
يجب على الممرض القانوني تشجيع أكبر قدر ممكن من المرضى للنحكم بالوزن	☐	☐	☐	☐
يجب على الممرض القانوني مناقشة النحكم بالوزن مع المريض فقط إذا رغب هو في ذلك	☐	☐	☐	☐

Aldossary (2010)

الـقـســـــم الرابع: <u>أفكار حول كادر العناية الصحية</u>

يرجى وضع علامة في المربع الذي تعتقد انه يمثل أفضل جواب لرأيك حول دور كوادر العناية الصحية .

العبارات	أوافق	لا أوافق	لا أعرف
هناك فرق بسيط بين النشاطات التمريضية التي يقوم بها الممرض القانوني والنشاطات التي يقوم بها الممرض الممارس (المساعد)	☐	☐	☐
الأطباء هم فقط المعنيون بإجراء التقييم البدني للمريض	☐	☐	☐
الممرضون القانونيون هم فقط المخولون لتوعية المريض (أو أحد أفراد عائلته) عن الأدوية التي سيتناولها المريض	☐	☐	☐
الممرضون القانونيون هم فقط المخولون لإعطاء الدواء الموصوف	☐	☐	☐
على الاطباء ان يطلبوا عناية تمريضية معينة لمرضاهم	☐	☐	☐
على الأطباء مراقبة أداء الممرضون وعلى الممرضون تنفيذ ما يطلب منهم الأطباء	☐	☐	☐
يستطيع الممرض القانوني أن يقيم حالة المريض بكفاءة وان يخبر الطبيب عند الضرورة	☐	☐	☐
الأطباء هم فقط المخولون بمناقشة التشخيص المرضي مع المريض	☐	☐	☐
على الممرضين القانونيين أن يقررو وبشكل منفصل عن الأطباء العناية التمريضية المناسبة للمرضى	☐	☐	☐
يستطيع الممرض الممارس (المساعد) أن يحل مكان الممرض القانوني في حال غيابه	☐	☐	☐

العبارات	أوافق	لا أوافق	لا أعرف
على جميع الكادر التمريضي أن يشارك في راحة المريض وتطمينه	☐	☐	☐
الممرضون القانونيون هم فقط المخولون لتقديم المعلومات الخاصة بحالة المريض لعائلته لتخفيف قلقهم	☐	☐	☐
إن عائلة المريض وبشكل منفرد تقوم بتأمين الدعم المعنوي والعاطفي للمريض	☐	☐	☐
لدى الممرضين القانونيين عموما المعرفة الكافية لتقييم المستوى التعليمي للمريض قبل تقديم المعلومات الصحية له	☐	☐	☐
لدى الممرضين القانونيين عموما المعرفة الكافية لتقديم التوعية الصحية المتعلقة بالتشخيص المرضي للمريض وتطورات المرض	☐	☐	☐
لدى الممرضين القانونيين عموما المعرفة الكافية للتشاور مع المريض (وعائلته) بخصوص الرعاية الصحية المخططة له	☐	☐	☐
لدى الممرضين القانونيين عموما المعرفة الكافية لمناقشة الرعاية الصحية المطلوبة للمريض مع عائلته إذا كان المريض غير قادر على العناية بنفسه	☐	☐	☐
لدى الممرضين القانونيين عموما المعرفة الكافية لوصف حالة المريض بدقة لباقي أعضاء فريق الرعاية الصحية	☐	☐	☐
على الأطباء أن يتحملوا مسؤولية تدريب و تدريس الممرضون	☐	☐	☐
الممرضون القانونيون هم فقط المخولون لشرح كافة الإجراءات والفحوصات الطبية للمريض	☐	☐	☐

Fitzpatrick et al (1997); Shurique (2006)

الـقـســـــم الخامس: <u>حول نمط حياتك</u>

١. يرجى وضع علامة في المربع الذي ينطبق على النشاط البدني الخاص بك حالياً.

أ. النشاط البدني أو ممارسة الرياضة التي تشمل أنشطة مثل المشي السريع، الهرولة، وركوب الدراجات والسباحة، أو أي نشاط آخر فيه مجهود لا يقل عن شدة هذه الأنشطة.

العبارات	نعم	لا
في الوقت الحاضر أنا ممارس للرياضة	☐	☐
أرغب بأن أكون أكثر نشاطاً بدنياً خلال الستة أشهر القادمة	☐	☐

ب. للرياضة أن تكون منتظمة، يجب أن تصل الى مجموع ٣٠ دقيقة أو أكثر باليوم ، وينبغي القيام على سبيل المثال، أن تمشي لمدة ٣٠ دقيقة أو تمشي ثلاثة مرات بها على الأقل ٥ أيام في الأسبوع يوميا لمدة ١٠ دقائق كل مرة ليصبح المجموع ٣٠ دقيقة

العبارات	نعم	لا
في الوقت الحاضرأنا أمارس الرياضة بشكل منتظم	☐	☐
أنا أمارس الرياضة منذ ستة أشهر بإنتظام	☐	☐

McDowell et al (1997)

٢. يرجى وضع علامة في المربع الذي يصف وجهة نظرك. وفيما يلي العبارات التي تتعلق حول ممارسة الرياضة.

العبارات	أوافق بشدة	أوافق	أعارض	أعارض بشدة
التمارين الرياضية تأخذ حيزاً كبيراً من وقتي	☐	☐	☐	☐
التمارين الرياضية تتعبني	☐	☐	☐	☐
الأماكن المخصصة لممارسة الرياضة بعيدة بالنسبة لي	☐	☐	☐	☐
أشعر بالإحراج من ممارسة الرياضة	☐	☐	☐	☐

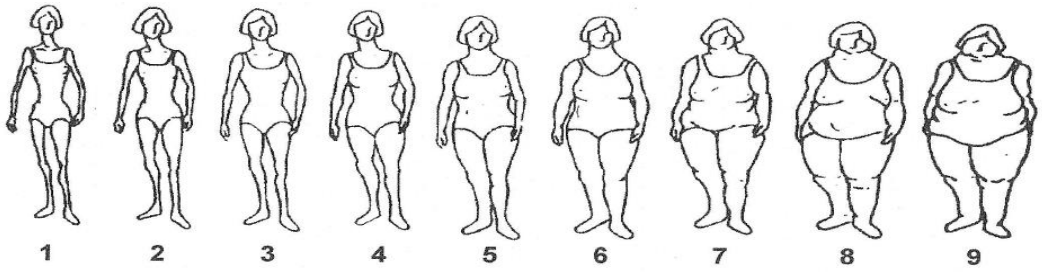
العبارات	أوافق بشدة	أوافق	أعارض	أعارض بشدة
ممارسة الرياضة مكلفة	☐	☐	☐	☐
مواعيد المراكز الرياضية لا تناسب أوقاتي	☐	☐	☐	☐
ممارسة الرياضة تسبب لي الإرهاق	☐	☐	☐	☐
الزوج/ الزوجة أو الصديق/الصديقة المقربة لا تشجعني على ممارسة الرياضة	☐	☐	☐	☐
ممارسة الرياضة تأخذ حيزاً كبيراً من أوقات العائلة	☐	☐	☐	☐
أعتقد أن الملابس المخصصة لممارسة الرياضة تبدو مضحكة على الأشخاص	☐	☐	☐	☐
أفراد عائلتي لا يشجعوني على ممارسة الرياضة	☐	☐	☐	☐
ممارسة الرياضة تأخذ حيزاً كبيراً من واجبات العائلة	☐	☐	☐	☐
ممارسة الرياضة عمل صعب بالنسبة لي	☐	☐	☐	☐
بالنسبة لي يوجد أماكن قليلة لممارسة الرياضة	☐	☐	☐	☐

. هل تعاني من مشاكل صحية طويلة المدى تقلل من نشاطك البدني؟

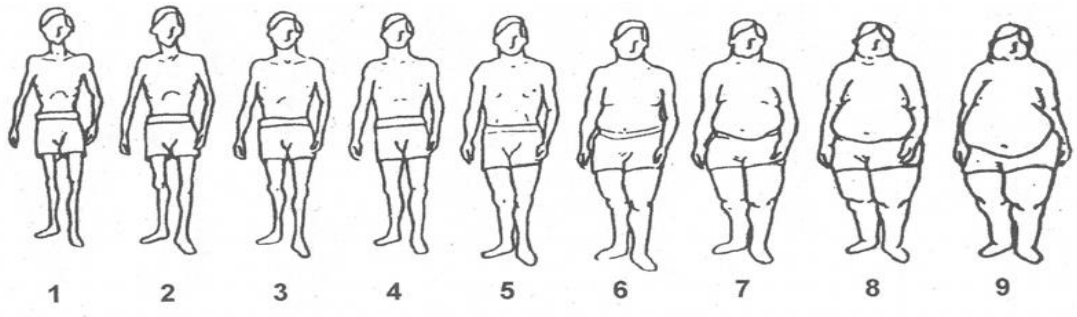
☐ نعم ☐ لا إذا نعم، حدد ما هي.....

٤. إختر الشكل الأقرب وصفاً لجسمك الحقيقي _ في الجزء المخصص للإناث، إذا كنتي حامل في يوصف جسمك قبل الحمل_ ضع دائرة حول الرقم الذي يمثل رأيك؟ الوقت الحالي إختاري الرقم الذي

أ. إذا كنت إمرأة:

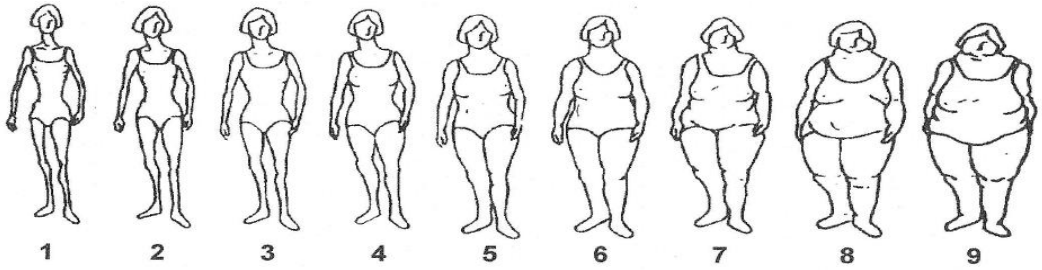


ب. إذا كنت رجل:

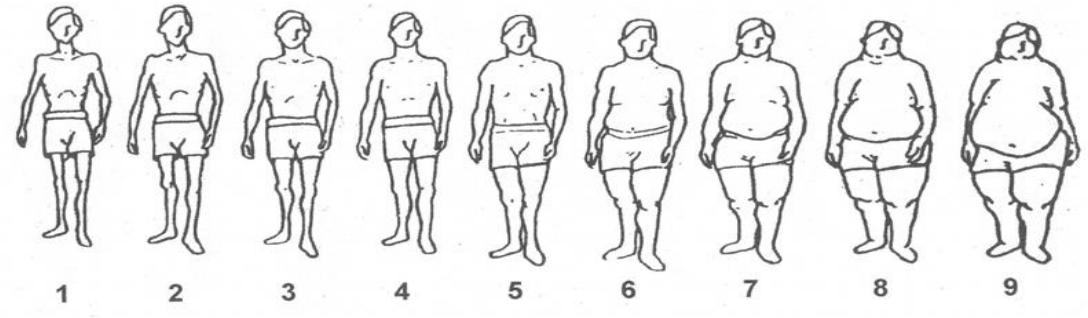


٥. إختر الشكل الأقرب وصفاً للجسم الذي ترغب به؟ ضع دائرة حول الرقم الذي يمثل رأيك.

أ. إذا كنت إمرأة:



ب. إذا كنت رجل:



Greenleaf et al (2004)

٦. هل قمت سابقا بتدخين السجائر/ النرجيلة بشكل منتظم؟

☐ **نعم** ☐ **لا**

إذا كانت الإجابة نعم، ألرجاء تحديد متى بدأت التدخين والى متى استمريت ..... بالتدخين....

٧. هل تدخن السجائر/النرجيلة حاليا بشكل منتظم؟

☐ نعم ☐ لا إذا كانت الإجابة نعم، كم عدد السجائر/النرجيلة التي تدخنها يوميا.....

٨. كيف تصف حالتك الصحية بشكل عام؟

☐ جيدة جداً ☐ جيدة ☐ سيئة ☐ سيئة جداً

القسم السادس: معلومات شخصية

١. الجنس؟ ☐ ذكر ☐ أنثى

٢. الجنسية؟ ☐ أردني ☐ غير أردني

ألرجاء التحديد.....

٣. ما هي الفئة العمرية التي تنتمي إليها ؟

☐ ٢٠-٢٩ سنة ☐ ٣٠-٣٩ سنة ☐ ٤٠-٤٩ سنة ☐ ٥٠ سنة وما فوق

٤. في أي سنة سجلت في نقابة الممرضين؟.....

٥. ما هي اعلى شهادة علمية قد حصلت عليها؟

الرجاء ☐ البكالوريوس ☐ الماجستير ☐ الدكتوراه ☐ غير ذلك

☐ التحديد.....

٦. من اي بلد حصلت على تدريبك الجامعي في التمريض؟

☐ الاردن ☐ غير الاردن إذا كانت الإجابة غير الاردن، الرجاء التحديد.....

٧. في اي قسم تعمل الان؟

☐ الباطني ☐ الجراحي ☐ المركز الصحي ☐ العيادات الخارجية

٨. في اي قطاع صحي تعمل الان؟

☐ قطاع عام ☐ قطاع خاص ☐ الخدمات الطبية الملكية

☐ موافق على استعمال بياناتي الشخصية حسب ما تم شرحه لي وأنا افهم ان هذه المعلومات سوف تعامل حسب/ وفقاً لأحكام قانون حماية البيانات لعام ١٩٩٨.

أشكرك على قضاؤك هذا الوقت لتكملة الأستبيان؛ يرجى وضع هذا الأستبيان في الصندوق الموجود في مكتب التمريض؛ إذا كان لديك الرغبة في إضافة المزيد من المعلومات، يرجى كتابتها في الفراغ الموجود بالأسفل؛ كما يرجى ألا تتردد في الأستفسار إذا كان لديك أية أسئلة أو تقديم أية اقتراحات.

شكرا جزيلاَ لوقتك في إستكمال هذا الاستبيان

إذا كانت لديكم اسئلة أو أردتم معلومات حول الدراسة، الرجاء الإتصال:

ممدوح الحنيطي

طالب دكتوراه

جامعة كنجز كوليج لندن، بريطانيا

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Appendix 3

Test-retest Results

Test-retest Results

The test-retest technique was undertaken to assess the stability of the study instrument. This study instrument was used in a cross-sectional study conducted in Jordan to explore the role legitimacy of the RNs in health promotion relating to CVD. A sample of 27 RNs from different care settings completed the questionnaire on the first occasion, and 26 RNs completed the questionnaire again after three weeks. One participant did not complete the questionnaire for the second time and the participant's data were withdrawn. Calculation of the reliability coefficient was undertaken using a percent agreement and Cohen's Kappa Coefficient.

Using Cohen's Kappa Coefficient test, Zero ("0") indicates that the comparison between the test and retest of the questionnaire responses is the same as it would be expected by chance. A range of values between "0-0.20" indicates slight agreement, "0.21-0.40" indicates fair agreement; "0.41-0.60" indicates moderate agreement; "0.61-0.80" indicates substantial agreement; and "0.81-1.00" indicates perfect agreement. Ambiguous results can occur when using Cohen's Kappa Coefficient if there are high levels of agreement in particular responses between the first and second occasions. Low results do not necessarily reflect low rates of overall agreement. A percent agreement was also used which works by calculating the total percentage for each item. It is important to note that Cohen's Kappa Coefficient measures the agreement as it would be expected by chance, unlike the percent agreement which measures only the observed agreement.

1. Sample characteristics

A total of 26 RNs participated in the test-retest study, 73% of whom worked in the public sector and 27% worked in the private sector. Two thirds of the sample were aged 30-49 years (19%, 20-29 years; 38.5%, 30-39 year; 30.8%, 40-49 years; and 11.5%, 50 years and over). The sample were mainly female (80.8%) and mainly Jordanian (96.2 %). The participants were well educated, with 65% having a Masters degree and 35% a PhD degree. Just under one fifth (19%) reported having health problems. The characteristics of the sample are presented in Table 1.

Table 1: Characteristics of the test re-test sample

		n	%
Health care sector n=26	Public	19	73.1
	Private	7	26.9
Gender n=26	Male	5	19.2
	Female	21	80.8
Age group n=26	20-29 years	5	19.2
	30-39 years	10	38.5
	40-49 years	8	30.8
	50 years and more	3	11.5
Educational qualifications n= 26	MSc	17	65.4
	PhD	9	34.6
Nationality n=26	Jordanian	25	96.2
	Non-Jordanian	1	3.8
Initial RNs training n= 26	Jordan	23	88.5
	Other	3	11.5
Health status n= 25	Poor	1	4.0
	Good	18	72.0
	Very good	6	24.0
Health problems n= 26	No	21	80.8
	Yes	5	19.2

The study instrument consists of five sections. The test-retest results of each section are discussed using Cohen's Kappa Coefficient and a percent agreement.

2. RNs' knowledge of the CVD scale

This scale included 16 items regarding the RNs' knowledge of CVD. Responses to each item were coded as 'right' or 'wrong' and 'I don't know' (coded as wrong). The agreement between the test and retest for the CVD knowledge scale showed that nine items using the percentage calculation had perfect agreement (See Table 2) (a person who smokes is more likely to develop heart disease; a person with a high cholesterol level in the blood is more likely to develop heart disease; eating fatty foods does not affect the cholesterol level in blood; regular exercise will lower a person's chance of developing heart disease; a person who stops smoking will lower his/her chance of developing heart disease; a person with high blood pressure is more likely to develop heart disease; if a person's "bad" cholesterol (LDL) is high, s/he is more likely to develop heart disease; being overweight increases a person's chance of developing heart disease; and keeping blood pressure under control will reduce a person's chance of developing heart disease).

The seven items were measured using Cohen's Kappa Coefficient (See Table 2). Using Cohen's Kappa Coefficient, one item demonstrated a statistically significant perfect agreement (a person with diabetes is more likely to develop heart disease; $p<0.001$); one had a statistically significant moderate agreement (if a person's 'good' cholesterol (HDL) is high, s/he is more likely to develop heart disease; $p=0.009$); four items had a fair agreement (a person always knows when s/he has heart disease; only exercising in a gym or exercise class will lower a person's chance of developing heart disease; older persons are more likely to develop heart disease; and walking and heavy housework are considered exercise that will help lower a person's chance of developing heart disease; $p>0.05$). One item (if a person has a family history of heart disease, s/he is more likely

to develop heart disease, *K*= -0.04 *p*=0.838) had no agreement but it was not statistically significant.

Overall, ten items demonstrated perfect agreement (0.81-1.00); one item showed moderate agreement (0.41-0.60); four items indicated fair agreement (0.21-0.40); and one item had no agreement (*K*=-0.040). Overall, the CVD knowledge scale showed a high-level of agreement (0.81-1) for the majority of the items (62%), with 30% of the items reporting fair to moderate agreement (0.21-0.60).

Table 2: Reliability analysis of the CVD knowledge scale

Items	***Kappa,*** ***P value***	**Agreement %**
A person always knows when s/he has heart disease	*K*=0.325 *p* =0.093	–
A person who smokes is more likely to develop heart disease	–	100
Keeping blood pressure under control will reduce a person's chance of developing heart disease	*K*= 0.040 *p* =0.838	–
A person with a high cholesterol level in the blood is more likely to develop heart disease	–	100
Only exercising in a gym or exercise class will lower a person's chance of developing heart disease	*K*=0.339 *p* =0.07	–
Eating fatty foods does not affect the cholesterol level in blood	–	100
A person with diabetes is more likely to develop heart disease	*K*=1.000 *p*<0.001	–

Cont. Table 2: Reliability analysis of the CVD knowledge scale

Items	*Kappa,* *P value*	Agreement %
If a person has a family history of heart disease, s/he is more likely to develop heart disease	*K*=-0.040 *p* =0.838	–
Regular exercise will lower a person's chance of developing heart disease	–	100
A person who stops smoking will lower his/her chance of developing heart disease	–	84.0
A person with high blood pressure is more likely to develop heart disease	–	96.2
If a person's "bad" cholesterol (LDL) is high, s/he is more likely to develop heart disease	–	100
If a person's 'good' cholesterol (HDL) is high, s/he is more likely to develop heart disease	*K*=0.506 *p* =0.009	–
Being overweight increases a person's chance of developing heart disease	–	96.0
Older persons are the more likely to develop heart disease	*K*=0.348 *p* =0.075	–
Walking and heavy housework are considered exercise that will help lower a person's chance of developing heart disease	*K*=0.264 *p* =0.165	–

3. General health promotion scale

This scale included 19 items focusing on promoting general health using a four-point Likert response scale. Ten items had not been measured using Cohen's Kappa Coefficient but measured only using a percentage calculation. Of the ten items, three (the RN finds health promotion dull and boring**;** the RN should only provide health promotion counselling if it is requested by the physician; and RNs do not have enough time to carry out health promotion) had substantial agreement and seven items (the RN

is the most appropriate health personnel to get involved in health promotion; the patient's lifestyle is conditioned by his/her culture and environment; there is not much that the RN can do to change them; the patient does not take any notice of what the RN says about changing lifestyle; the evidence on changing health-related behaviours is too uncertain and contradictory for the RN to counsel patients; RNs do not have the necessary skills to promote health; the patient finds health promotion dull and boring) reported moderate agreement (See Table 3).

The remaining nine items were measured using Cohen's Kappa Coefficient. The results of the nine items were as follows: three items showed moderate agreement (the RN should give priority to acute care rather than health education and counselling, K=0.455 p=0.001); (helping the patients to understand how health-related behaviours interfere with health is an important part of the RNs' duty, K=0.415 p=0.015); (RNs have very limited knowledge about patient's culture to be able to promote health, K=0.42 p=0.004). Four items demonstrated fair agreement (the RN should not interfere with the patient's life telling him/her to change his/her health related behaviour, K=0.240 p>0.05); (the patient is totally responsible to promote his/her health, K=0.251 p>0.05); (giving a detailed explanation to the patients about their health tends to worry them rather than reassure them, K=0.268 p=0.058); (RNs do not speak the patient's language to be able to promote health, K=0.266 p=0.051). One had slight agreement (the RN should be a health advocate insisting that preventive health is put on the political agenda, K=0.120 p>0.05). One had no agreement (the RN should take more responsibility for health promotion, K=-0.054 p>0.05).

Five items reported statistically significant agreement (p<0.05) using Cohen's Kappa Coefficient. One item reported no agreement (K=-0.054 p>0.05) but this disagreement was not statistically significant. Overall, three items demonstrated substantial agreement

(0.61-0.80); ten items showed moderate agreement (0.41-0.60); four items had fair agreement (0.21-0.40); one item indicated slight agreement (0.0.20); and one item showed no agreement (*K*=-0.054). The results of the test-retest for this scale showed moderate to substantial agreement (0.41-0.80) for the majority of the items (68%), with 26% of the items demonstrating slight to fair agreement (0.0-0.40).

Table 3: Reliability analysis of the general health promotion scale

Items	*Kappa, P value*	Agreement %
The RN should be a health advocate, insisting that preventive health is put on the political agenda	*K*= 0.120 *p* =0.482	65.4
The RN should take more responsibility for health promotion	*K*=-0.054 *p*=0.768	53.9
The RN is the most appropriate health personnel to get involved in health promotion	_	57.7
The RN should give priority to acute care rather than health education and counselling.	*K*= 0.455 *p* =0.001	65.3
The RN should only provide health promotion counselling if it is requested by the physician.	_	61.5
The patient is totally responsible to promote his/her health.	*K*= 0.251 *p* =0.120	60.0
The RN finds health promotion dull and boring	_	70.9
The RN should not interfere with the patient's life telling him/her to change his/her health related behaviour.	*K*=0.240 *p* =0.100	56.0
The patient's lifestyle is conditioned by his/her culture and environment; there is not much that the RN can do to change them.	_	52.0
The patient does not take any notice of what the RN says about changing lifestyle.	_	41.7
Giving a detailed explanation to the patients about their health tends to worry them rather than reassure them.	*K*=0.286 *p* =0.058	58.3

Cont. Table 3: Reliability analysis of the general health promotion scale

Items	*Kappa,* *P value*	Agreement %
Helping the patients to understand how health-related behaviours interfere with health is an important part of the RNs' duty.	*K*=0.415 *p* =0.015	68.0
The patient gets annoyed when the RN asks him/her about health-related behaviours especially when it is not directly related to his/her presenting health problems	–	50.0
The evidence on changing health-related behaviours is too uncertain and contradictory for the RN to counsel patients.	–	43.4
The patient finds health promotion dull and boring	–	42.5
RNs do not have enough time to carry out health promotion.	–	69.2
RNs do not have the necessary skills to promote health.	–	57.7
RNs do not speak the patient's language to be able to promote health	*K*=0.266 *p* =0.051	53.8
RNs have very limited knowledge about patient's culture to be able to promote health.	*K*=0.421 *p* =0.004	69.2

4. Health promotion and CVD scale

This scale consists of 15 items focusing on promotion of specific health behaviours (smoking cessation, weight management and physical activity) using a four-point Likert scale. Using a percentage calculation, one item (the RN should encourage as many patients as possible to quit smoking) had perfect agreement; three items (the RN should discuss smoking cessation only if the patient mentions it; promoting physical activity is important in nursing practice; the RN has sufficient knowledge to counsel patients about physical activity) had substantial agreement and five items (the RN should encourage as

many patients to increase their physical activity; the RN should discuss physical activity only if the patient mentions it; the RN should only counsel patients about weight management if linked with their presenting health problems; the RN should encourage as many patients to control their weight; and the RN should discuss weight management only if the patient mentions it) had moderate agreement.

The remaining six items were measured using both Cohen's Kappa Coefficient (See Table 4). These were the following: (promoting smoking cessation is important in nursing practice, substantial agreement K= 0.601, p=0.002); (the RN has sufficient knowledge to counsel patients to quit smoking and about the consequences of continued smoking, slight agreement K=0.345, p=0.019); (the RN should only counsel patients to quit smoking if linked with their presenting health problems, slight agreement K=0.349 p=0.001); (the RN should only counsel patients about physical activity if linked with their presenting health problems, slight agreement K=0.240 p=0.100); (promoting weight management is important in nursing practice, slight agreement K=0.286 p=0.058); and (the RN has sufficient knowledge to counsel patients about weight management, moderate agreement K=0.415, p=0.015).

Using Cohen's Kappa Coefficient and a percentage calculation, the test-retest results indicated that one item demonstrated perfect agreement (0.81-1.00); four items showed substantial agreement (0.61-0.80); six items had moderate agreement (0.41-0.60); and four had slight agreement (0-0.20). Overall, the results of the test-retest showed moderate to substantial agreement (0.41-0.80) for 73% of the items, with 26% demonstrating slight agreement (0-0.20). Of all the scale items, five items reported statistically significant agreement (p<0.05).

Table 4: Reliability analysis of the health promotion and CVD scale

Items	*Kappa,* *P value*	Agreement%
Promoting smoking cessation is important in nursing practice.	*K*= 0.601 *p* =0.002	88.8
The RN has sufficient knowledge to counsel patients to quit smoking and about the consequences of continued smoking.	*K*= 0.345 *p* =0.019	65.3
The RN should only counsel patients to quit smoking if linked with their presenting health problems.	*K*=0.393 *p*=0.001	61.5
The RN should encourage as many patients as possible to quit smoking	–	88.5
The RN should discuss smoking cessation only if the patient mentions it.	–	60.0
Promoting physical activity is important in nursing practice.	–	70.8
The RN has sufficient knowledge to counsel patients about physical activity.	–	65.4
The RN should only counsel patients about physical activity if linked with their presenting health problems.	*K*=0.240 *p* =0.100	56.0
The RN should encourage as many patients to increase their physical activity.	–	52.0
The RN should discuss physical activity only if the patient mentions it.	–	41.7
Promoting weight management is important in nursing practice.	*K*=0.286 *p* =0.058	58.3
The RN has sufficient knowledge to counsel patients about weight management.	*K*=0.415 *p* =0.015	68.0

Cont. Table 4: Reliability analysis of the health promotion and CVD scale

Items	*Kappa, P value*	Agreement%
The RN should only counsel patients about weight management if linked with their presenting health problems.	–	40.0
The RN should encourage as many patients to control their weight	–	56.4
The RN should discuss weight management only if the patient mentions it.	–	43.4

5. Roles of different health care personnel scale

This scale included 20 items focusing on the difference between the role of nurses and the role of other health care personnel relating to the psychosocial and communication aspects of patient care. Each item is followed by three alternative responses, namely; 'agree', 'disagree' or 'don't know'. Eight items measured using a percentage calculation, of them, six items (only doctors should carry out physical assessments of patients; doctors should supervise nursing practice and nurses should do what the doctors tell them; RNs can assess the patient's condition effectively and inform the doctors when required; all nursing staff should comfort and reassure patients emotionally; the patient's family solely provides all the emotional support the patient needs; and doctors should be responsible for teaching nurses) had perfect agreement and two items (only RNs should give prescribed medications; and only doctors should discuss the diagnosis with the patient) had substantial agreement.

The remaining 12 items were measured using Cohen's Kappa Coefficient (See Table 5). Five items had moderate agreement, two had fair agreement, three had slight agreement and two had no agreement. These were the following: (there is little if any difference

between the range of nursing care activities provided by RNs and practical nurses, K=0.439 p=0.009); (only RNs should discuss prescribed medications with patients or the family, K=-0.036; p=0.822); (doctors should order specific nursing care for (their) patients, K=0.409 p=0.021); (RNs should decide independently of doctors what nursing care is appropriate for their patients, K=0.516 p=0.008); (practical nurses can fully cover the place of RNs in his/her absence, K=-0.061, p=0.713); (only RNs should give information relating to patient's condition to the family to reduce anxiety, K=0.438 p=0.011); (in general, RNs are knowledgeable enough to assess the patient's educational status prior providing information, K=0.467 p=0.001); (in general, RNs are knowledgeable enough to provide health education relevant to patient's diagnosis and prognosis, K=0.061 p=0.671); (in general, RNs are knowledgeable enough to consult the patient and family if relevant regarding planned care, K=0.038 p=0.821); (in general, RNs are knowledgeable enough to discuss required care with the family if the patient is dependent, K=0.095 p=0.562); (in general, RNs are able to describe concisely and accurately patient's condition to other health care team members, K=0.215 p=0.562); and (only RNs should explain forthcoming procedures or investigations to the patient, K=0.235 p=0.063).

Using Cohen's Kappa Coefficient, the roles of different health care personnel scale showed substantial to perfect agreement (0.61-1.00) for 40% of the items, with 25% reporting moderate agreement (0.21-0.40) and 25% reporting slight to fair agreement (0.00-0.40). Two items (practical nurses can fully cover the place of RNs in his/her absence; only RNs should discuss prescribed medications with patients or the family) using Cohen's Kappa Coefficient reported no agreement between the test-retest but without statistical significance (p>0.05).

The test-retest results for this scale indicated that six items demonstrated perfect agreement (0.81-1.00); two items showed substantial agreement (0.61-0.80); five items had moderate agreement (0.41-0.60); three items had fair agreement (0.21-0.40); two items had slight agreement (0-0.20); and two items had no agreement (*K*=-0.061; *K*=-0.036). Overall, this scale showed substantial to perfect agreement (0.61-1.00) for 40% of the items, with 25% reporting moderate agreement (0.21-0.40), 25% reporting slight to fair agreement (0.00-0.40) and 10% reporting no agreement.

Table 5: Reliability analysis of the roles of different healthcare personnel scale

Items	***Kappa, P value***	**Agreement %**
There is little if any difference between the range of nursing care activities provided by RNs and practical nurses.	*K*=0.439 *p* =0.009	72.0
Only doctors should carry out physical assessments of patients.	–	91.7
Only RNs should discuss prescribed medications with patients or the family.	*K*=-0.036 *p* =0.822	44.0
Only RNs should give prescribed medications	–	65.4
Doctors should order specific nursing care for (their) patients.	*K*=0.409 *p* =0.021	72.0
Doctors should supervise nursing practice and nurses should do what the doctors tell them.	–	88.4
RNs can assess the patient's condition effectively and inform the doctors when required.	–	88.5
Only doctors should discuss the diagnosis with the patient.	–	76.9
RNs should decide independently of doctors what nursing care is appropriate for their patients.	*K*=0.516 *p* =0.008	76.9

Cont. Table 5: Reliability analysis of the roles of different healthcare personnel scale

Items	*Kappa, P value*	Agreement %
Practical nurses can fully cover the place of RNs in his/her absence.	*K*=-0.061 *p* =0.713	84.6
All nursing staff should comfort and reassure patients emotionally	–	100
Only RNs should give information relating to patient's condition to the family to reduce anxiety.	*K*=0.438 *p* =0.011	73.0
The patient's family solely provides all the emotional support the patient needs	–	88.0
In general, RNs are knowledgeable enough to assess the patient's educational status prior providing information.	*K*=0.467 *p* =0.001	80.7
In general, RNs are knowledgeable enough to provide health education relevant to patient's diagnosis and prognosis.	*K*=0.061 *p* =0.671	61.5
In general, RNs are knowledgeable enough to consult the patient (and family if relevant) regarding planned care.	*K*=0.038 *p* =0.821	68.0
In general, RNs are knowledgeable enough to discuss required care with the family if the patient is dependent.	*K*=0.095 *p* =0.562	73.0
In general, RNs are able to describe concisely and accurately patient's condition to other health care team members.	*K*=0.215 *p* =0.206	69.2
Doctors should be responsible for teaching nurses.	–	80.0
Only RNs should explain forthcoming procedures or investigations to the patient	*K*=0.235 *p* =0.063	80.7

6. Personal health behaviour data scale

The fifth scale of the questionnaire relates to personal lifestyle consisting of 24 selected items. The first sub-scale focuses on physical activity (Stages of Change) relating to physical exercise using five items followed by two alternative responses 'yes' or 'no'.

The second section consisting of 14 items measures perceived benefits of exercise and perceived barriers to exercise using a four-point Likert scale. The third sub-scale consists of two items asking participants to select the figure which best depicts their body shape and desired shape from 1 to 9 body shapes. Additionally, three short items relate to smoking status.

Ten items measured using a percentage calculation, of which one (I intend to become more physically active in the next 6 months) had perfect agreement. Seven items (I have been regularly physically active for the past 6 months; I am too embarrassed to exercise; exercise facilities do not have convenient schedules for me; I think people in exercise clothes look funny; exercise takes too much time from my family responsibilities; exercise is hard work for me; and there are too few places for me to exercise) had substantial agreement. Two items (exercise takes too much time from family relationships; and exercising takes too much of my time) had moderate agreement.

The remaining 14 items were measured using Cohen's Kappa Coefficient. Two items had perfect agreement, four had substantial agreement, five had moderate agreement and three had fair agreement. These items were as follows: (I am currently physically active, K=0.598 p=0.003); (I currently engage in regular physical activity, K= 0.495 p=0.015); (exercise tires me, K=0.651 p<0.001); (places for me to exercise are too far away, K=0.497 p=0.001); (it costs too much to exercise, K=0.202 p=0.050); (I am fatigued by exercise, K=0.216 p=0.058); (my spouse/close friend does not encourage exercising, K=0.445 p=0.001); (my family members do not encourage me to exercise, K=0.383 p=0.011); (long terms health problems, K=0.702 p<0.001); (actual body shape, K=0.744 p<0.001); (desired body shape, K=0.459 p<0.001); (smoking history, K=0.864 p<0.001); (smoking status, K=1.000 p<0.001); and (health status, K=0.668 p<0.001).

Using Cohen's Kappa Coefficient and a percentage calculation, this scale indicated that three items demonstrated perfect agreement (0.81-1.00); eleven showed substantial agreement (0.41-0.80); seven had moderate agreement (0.41-0.60); and three had fair agreement (0.21-0.40). Overall, this scale showed substantial to perfect agreement (0.61-1.00) in 58% of the items, with 29% demonstrating moderate agreement (0.41-0.60) and 13% fair agreement (0.21-40).

Table 6: Reliability analysis of the personal health behaviour data

Items	*Kappa, P value*	Agreement %
I am currently physically active.	*K*=0.598 *p* =0.003	80.0
I intend to become more physically active in the next 6 months.	–	88.5
I currently engage in regular physical activity.	*K*=0.495 *p* =0.015	83.3
I have been regularly physically active for the past 6 months.	–	79.2
Exercising takes too much of my time.	–	56.0
Exercise tires me.	*K*=0.651 *p* <0.001	80.0
Places for me to exercise are too far away	*K*=0.497 *p* =0.001	72.0
I am too embarrassed to exercise.	–	73.0
It costs too much to exercise.	*K*=0.202 *p* =0.050	46.1
Exercise facilities do not have convenient schedules for me	–	61.5
I am fatigued by exercise.	*K*=0.216 *p* =0.058	53.8

Cont. Table 6: Reliability analysis of the personal health behaviour data

Items	*Kappa,* *P value*	Agreement %
My spouse/close friend does not encourage exercising.	*K*=0.445 *p* =0.001	65.3
Exercise takes too much time from family relationships.	–	57.7
I think people in exercise clothes look funny.	–	73.0
My family members do not encourage me to exercise.	*K*=0.383 *p* =0.011	65.3
Exercise takes too much time from my family responsibilities	–	69.3
Exercise is hard work for me.	–	61.5
There are too few places for me to exercise.	–	65.4
Long terms health problems	*K*=0.702 *p* <0.001	92.0
Actual body shape	*K*=0.744 *p* <0.001	82.5
Desired body shape	*K*=0.459 *p* =0.001	65.2
Smoking history	*K*=0.864 *p* <0.001	95.9
Smoking status	*K*=1.00 *p* <0.001	100
Health status	*K*=0.668 *p* <0.001	87.5

Summary

The test-retest technique was undertaken to assess the stability of the study instrument. Cohen's Kappa Coefficient and a percentage calculation were used to calculate the agreement between the first and second occasions. The results indicated that overall, there was a moderate to high agreement in all of the scales. The majority of the items (n=69, 73%) demonstrated moderate to high agreement (0.41-1.00), with just over one quarter (22%) of the items (n=21) demonstrating slight to fair agreement (0.0-0.40), and four items (4%) showing no agreement. Across the five scales, the roles of different healthcare personnel scale demonstrated the lower level of agreement, while both the general health promotion and personal health behaviours scales showed the higher level of agreement.

Appendix 4

Approval letters

El-Hneiti, Mamdouh

From: holly piper <hollypiper@hotmail.com>
Sent: 22 March 2012 16:40
To: El-Hneiti, Mamdouh
Subject: RE: Requesting permission to use your tool

Dear Mamdouh,

Please help yourself! I hope it is helpful.. The questionnaires are provided in the paper in Pt Educ and Couns. If you have any problems accessing the paper please let me know and I can send you the pdf.

best wishes,
holly john

From: mamdouh.el-hneiti@kcl.ac.uk
To: hollypiper@hotmail.com
Subject: Requesting permission to use your tool
Date: Thu, 22 Mar 2012 15:29:23 +0000

Dear Dr. John

I am undertaking a PhD study at King's College London and would like to use the general items of the Heart Disease Fact Questionnaire-Rheumatoid Arthritis questionnaires (HDFQ-RA-1&2) which you published with colleagues in 2009. I should be most grateful if you could give me the permission to use your scale in my study.

Please let me know if you need any additional information about my study.

Thank you for your time. I look forward to hearing back from you soon.

Best wishes
Mamdouh El-hneiti

Mamdouh El-hneiti
PhD student
Florence Nightingale School of Nursing & Midwifery
King's College London
Room 1.32 - James Clerk Maxwell Building
57 Waterloo Road
London SE1 8WA
Email: mamdouh.el-hneiti@kcl.ac.uk

بسم الله الرحمن الرحيم

This is to confirm that Mr Mamdouh El-Hneiti, PhD student in King's College London, has a permission to copy and use the enclosed Doctor, Nurse (English version) and Patient (Arabic version) Questionnaires that used in "An Exploratory Study of the Health Promotion Role of the Staff Nurse in Saudi Arabia". The instrument may be reproduced in the publication of study results without further permission.

I thank you for your interest in using the above questionnaires and wish you all the best in your PhD research.

Best Regards,

Dr. Ameera M. Aldossary

Encl: Doctor Questionnaire (English)
Nurse Questionnaire (English)
Patient Questionnaire (Arabic)

El-Hneiti, Mamdouh

From: mona shuriquie <mona_shuriquie@yahoo.com>
Sent: 26 March 2012 10:53
To: El-Hneiti, Mamdouh
Subject: Re: Arabic version of

Dear Mamdouh

Thank you for you reply. To secure access to the RMS you will need to submit a brief descritption of you study (not more that one page in length)in arabic and the questionnaires you will be using to collect data to the Ethincs committee at the Directorate of the RMS. I could not tell you how long it will take to secure access as you are not part of RMS personnel and would additionally need to secure security clearance. Some instances it may take as little as a couple of weeks and in others I have known it took 4 months. So it all depends...

Regarding the translation, unfortunately I have no written command of Arabic language. My translations and retranslations were done by some colleagues.

Please let me know if I can assist any other way in the near future

Best regards

Mona Shuriquie
From: "El-Hneiti, Mamdouh" <mamdouh.el-hneiti@kcl.ac.uk>
To: mona shuriquie <mona_shuriquie@yahoo.com>
Sent: Wednesday, March 21, 2012 3:50 PM
Subject: RE: Arabic version of

Dear Mona

Thank you for your kind email and for the Arabic version of the tool.

I think it is a good idea to ask nurses and doctors in Arabic. Therefore, I am thinking to present each item of my study questionnaire in Arabic and English for nurses and doctors. But for patients, I will be only using the Arabic version of the questionnaire.

Do you mind if you help to translate some sections of the questionnaire into Arabic as you have a good knowledge in nursing and have the skills in both research and English language.

As I mentioned in the first email, I will be recruiting sample from the RMS so I was wondering if you can tell me what is the process of gaining the permission from this sector. Will be difficult for me to do the research in the RMS?

I will be coming to Jordan on the 3rd of April 2012 to start my data collection.

Thank you for your time. I look forward to hearing back from you soon.

Best wishes

Mamdouh El-hneiti

1

PhD student
Florence Nightingale School of Nursing & Midwifery
King's College London
Room 1.32 - James Clerk Maxwell Building
57 Waterloo Road
London SE1 8WA
Email: mamdouh.el-hneiti@kcl.ac.uk
From: mona shuriquie [mona_shuriquie@yahoo.com]
Sent: 20 March 2012 07:51
To: El-Hneiti, Mamdouh
Cc: While, Alison
Subject: Re: Arabic version of

Dear Mahmoud

I am very happy that you are doing your PhD at King's and expecially with Prof Alison While. Please send her my best regards. She is a great inspiration.

I will attach the Arabic version of my tool which is also available in the appendix of my thesis. I do not have a translation of King's Nurse Performance Scale as I did not use the actual tool for data collection. I used the domains of the tool as a guide to develop questions for my tool.

I would also like to suggest that you do all data collection in Arabic if you are planning to ask the same questions to ensure reliability. I think that, as English is a second language for nurses and doctors, they might interpret questions in a different way than was meant.

Please don't hesitate to contact me if you need anything. I wish you the best.

Regards

Mona Shuriquie

From: "El-Hneiti, Mamdouh" <mamdouh.el-hneiti@kcl.ac.uk>
To: "mona_shuriquie@yahoo.com" <mona_shuriquie@yahoo.com>
Sent: Friday, March 16, 2012 3:48 PM
Subject: Arabic version of

Dear Shuriquie

How are you? I have met you 3 years ago in Jordan to ask you about doing PhD with Professor Alison While in King's College London. I started my study last year with Alison While to explore **"The Nurses' Role in Health Promotion and Cardiovascular Disease in Jordan"** using a cross-sectional survey.

I am recruiting sample (nurse, doctor, patients) from the three healthcare sectors in Amman to ask them about their views on health promotion by nurses. For patient's sample I will be using the Arabic version of the questionnaire whereas the English version will be used to ask nurses and doctors. I am emailing you to gain the permission for using the scale of "Opinions of the Roles of Health Care Personnel" in my study. In addition, could you please provide me with the Arabic version of this scale as well as the Arabic version of the "King's Nurse Performance Scale" (Fitzpatrick et al., 1997) so I can use them in my study. You used these two scales in your thesis which is about **"The Legitimate Role of the Medical-Surgical Staff Nurse in Jordon: The View of Patients, Doctors and Nurses"**

El-Hneiti, Mamdouh

From: While, Alison
Sent: 26 March 2014 19:09
To: El-Hneiti, Mamdouh
Subject: RE: Permission to use the "King's Nurse Performance" scale

Dear Mamdouh

Yes, you have permission to use the King's Nurse Performance Scale.

best wishes

Alison

Alison While BSc MSc PhD RN RHV CertEd Fellow of QNI
Emeritus Professor
King's College London

Research: http://www.researchgate.net/profile/Alison_While/

From: El-Hneiti, Mamdouh
Sent: 26 March 2014 17:12
To: While, Alison
Cc: Roberts, Julia
Subject: Permission to use the "King's Nurse Performance" scale

Dear Alison,

As you know that I used the "King's Nurse Performance" scale in my study. Can you please confirm your permission to use the scale so I can include it in the thesis.

Best wishes,
Mamdouh

Mamdouh El-hneiti
Full time PhD Student
Florence Nightingale School of Nursing and Midwifery
King's College London
Room 1.32
James Clerk Maxwell Buidling
57 Waterloo Road
London
SE1 8WA

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El-Hneiti, Mamdouh

From: Kelly Allison <kca@mail.med.upenn.edu>
Sent: 28 February 2014 13:55
To: El-Hneiti, Mamdouh
Subject: Re: Requesting permission to use your tool

Dear Dr. El-hneiti,
Dr. Stunkard is fully retired now. I can provide you with permission to use the figure rating scales, though, in his stead.

I give permission to use Dr. Stunkard's silhouettes (copyrighted) subject to clear attribution of authorship.

Reprinted from Stunkard AJ, Sorenson T, Schulsinger F. Use of the Danish Adoption Register for the study of obesity and thinness. IN: SS Kety, LP Rowland, RL Sidman, SW Matthysse (Eds.) The Genetics of Neurological and Psychiatric Disorders. New York: Raven Press, 1983, pp. 115-120.

Kelly C. Allison, Ph.D. for
Albert Stunkard, M.D.
University of Pennsylvania
Center for Weight & Eating Disorders

Kelly C. Allison, Ph.D.
Assistant Professor of Psychology in Psychiatry Perelman School of Medicine at the University of Pennsylvania
Center for Weight and Eating Disorders (Suite 3027) and Stunkard Weight Management Program (Mezzanine)
3535 Market Street
Philadelphia, PA 19104-3309
ph. 215-898-2823
kca@mail.med.upenn.edu

----- Original Message -----
From: "Mamdouh El-Hneiti" <mamdouh.el-hneiti@kcl.ac.uk>
To: kca@mail.med.upenn.edu
Sent: Friday, February 28, 2014 4:13:02 AM
Subject: Requesting permission to use your tool

Dear Dr. Stunkard,

I have undertaken a PhD study at King's College London and would like to obtain your permission to use the Figure Rating Scale which you published with colleagues in 1983. I should be most grateful if you could give me the permission to use your scale in my study.

Please let me know if you need any additional information about my study.

Thank you for your time and I look forward to hearing back from you soon.

Best wishes,
Mamdouh El-hneiti

Health Promotion Model Instrumentation Group
Nola J. Pender, PhD, RN, FAAN • Susan Noble Walker, EdD, RN, FAAN • Karen R. Sechrist, PhD, RN, FAAN

Dear Colleague:

Thank you for your interest in the Exercise Benefits/Barriers Scale (EBBS). The EBBS was developed in response to a need for an instrument designed to determine perceptions of individuals concerning the benefits of and barriers to participating in exercise. Items for the scale were obtained inductively from interviews and from the literature.

The EBBS is a 43-item summated rating scale consisting of two subscales, Benefits and Barriers. Ratings are obtained using a four-point response system. The EBBS has been tested for internal consistency, validity of its constructs, and test-retest reliability. A sample of 650 individuals over 18 years of age, primarily from northern Illinois, participated in the initial testing of the EBBS. Calculation of Cronbach's alpha for the 43-item instrument yielded a standardized alpha of .954. The 29-item Benefits Scale has a standardized alpha of .954 and the 14-item Barriers Scale has a standardized alpha of .866. Factor analysis yielded a nine-factor solution initially with an explained variance of 65.2%. Second order factor analysis yielded a two-factor solution, one a benefits factor and the other a barriers factor. Test-retest reliability was accomplished with a sample of 66 healthy adults at a two-week interval. Test-retest reliability was found to be .89 on the total instrument, .89 on the Benefits Scale and .77 on the Barriers Scale. Additional information on the development and initial testing of the EBBS can be found at in the following article:

> Sechrist, KR, Walker, SN, and Pender, NJ. (1987). Development and psychometric evaluation of the Exercise Benefits/Barriers Scale. *Research in Nursing & Health, 10,* 357-365.

You have our permission to download and use the EBBS for non-commercial data collection purposes such as research or evaluation projects as long as the following conditions are met:

- The EBBS will be used without any modifications other than translation into a language other than English (see information on translation, if required);
- The copyright statement will appear on the bottom of all copies of the EBBS; and
- All study participants will be over 18 years of age since the EBBS was not validated in younger populations.

A copy of the EBBS with scoring information is available for download. A Spanish translation of the EBBS is also available. If you need additional information, you may contact Dr. Karen Sechrist by e-mail (krsech@pacbell.net).

Best wishes with your research,

Karen R. Sechrist, PhD, RN, FAAN
for Pender/Walker/Sechrist

Research Ethics Office

5.11 Franklin-Wilkins Building
(Waterloo Bridge Wing)
Stamford Street
London SE1 9NH
Tel 020 7848 4077/4070/4020
Email rec@kcl.ac.uk
www.kcl.ac.uk/research/ethics

KING'S College LONDON

Mamdouh Yasein El-hneiti
Room 1.32, James Clerk Maxwell Building
57 Waterloo Road
LONDON
SE1 8WA

23 March 2012

Dear Mamdouh,

PNM/11/12-97 The nurses' role in health promotion and cardiovascular disease in Jordan.

Review Outcome: Full Approval

Thank you for submitting your application for ethical approval. This was reviewed by the PNM RESC on 20 March 2012. I am pleased to inform you that your application has met the requirements of the Committee. Therefore, full approval is now granted with the following provisos/conditions:

1. Section 1.4: Identify the statistician referred to in Section 8c, 5.1 & 6.4.
2. Sections 2.2 and 2.3: Please note that ethical approval for PhD studies is granted for a period of three years. Should you require longer than this you will need to make an extension request a month prior to the ethical approval lapse date specified below.
3. Section 2.9: Contact Herman Codner, in the College Finance office, to determine the appropriate insurance arrangements for studies conducted overseas. His e-mail address is herman.codner@kcl.ac.uk.
4. All Information Sheets:
    I. Provide more information about the purpose of the study.
    II. State that the study is for a postgraduate qualification.
5. Patient Information Sheets:
    I. Ensure that appropriate 'lay' language is used throughout.
6. Submit, for record, copies of permission letters from the gatekeeper organisations once these have been obtained.
7. We note you are undertaking a pilot study; should there be any significant changes to the main study resulting from the pilot study, please ensure you inform the Research Ethics Office accordingly.
8. Please note that it is your responsibility to ensure that you have secured all of the ethical and legal permissions required to conduct the study in Jordan.
9. Note that it is your responsibility to ensure that any documents requiring translations into local languages are accurate translations of those documents approved by the PNM RESC.

Please respond to the above provisos/conditions by submitting an email to pnm@kcl.ac.uk addressing each point in turn.

Note that the above provisos/conditions must be adhered to for the ethical approval granted by the PNM RESC to count as valid.

Please ensure that you follow all relevant guidance as laid out in the King's College London Guidelines on Good Practice in Academic Research (http://www.kcl.ac.uk/college/policyzone/index.php?id=247).

For your information ethical approval is granted until **20 March 2015**. If you need approval beyond this point you will need to apply for an extension to approval at least two weeks prior to this explaining why the extension is needed, (please note however that a full re-application will not be necessary unless the protocol has changed). You should also note that if your approval is for one year, you will not be sent a reminder when it is due to lapse.

Ethical approval is required to cover the duration of the research study, up to the conclusion of the research. The conclusion of the research is defined as the final date or event detailed in the study description section of your approved application form (usually the end of data collection when all work with human participants will have been completed), not the completion of data analysis or publication of the results. For projects that only involve the further analysis of pre-existing data, approval must cover any period during which the researcher will be accessing or evaluating individual sensitive and/or un-anonymised records. Note that after the point at which ethical approval for your study is no longer required due to the study being complete (as per the above definitions), you will still need to ensure all research data/records management and storage procedures agreed to as part of your application are adhered to and carried out accordingly.

If you do not start the project within three months of this letter please contact the Research Ethics Office.

Should you wish to make a modification to the project or request an extension to approval you will need approval for this and should follow the guidance relating to modifying approved applications:
http://www.kcl.ac.uk/innovation/research/support/ethics/applications/modifications.aspx
The circumstances where modification requests are required include the addition/removal of participant groups, additions/removal/changes to research methods, asking for additional data from participants, extensions to the ethical approval period. Any proposed modifications should only be carried out once full approval for the modification request has been granted.

Any unforeseen ethical problems arising during the course of the project should be reported to the approving committee/panel. In the event of an untoward event or an adverse reaction a full report must be made to the Chair of the approving committee/review panel within one week of the incident.

Please would you also note that we may, for the purposes of audit, contact you from time to time to ascertain the status of your research.

If you have any query about any aspect of this ethical approval, please contact your panel/committee administrator in the first instance (http://www.kcl.ac.uk/innovation/research/support/ethics/contact.aspx). We wish you every success with this work.

With best wishes

Yours sincerely

James Patterson – Senior Research Ethics Officer
For and on behalf of
Professor Gareth Barker, Chairman
Psychiatry, Nursing & Midwifery Research Ethics Subcommittee

c.c. Professor Alison While

Ministry of Health

Administrator of Prince Hamza hospital

Administrator of healthcare centres of Amman

Administration of Al-basheer hospital

Administration of Jameel Totanji hospital

Date: 06/05/2012

To whom it may concern,

This letter is to confirm that Mamdouh El-hneiti is allowed to undertake data collection as a part of his doctorate study title **"the Registered Nurse's role in health promotion relating to cardiovascular disease"**at the above hospitals and healthcare centres. The ethics committee (MBA/Ethics Committee/3120) approved his research on 02/05/2012.

Administrator of human resources

Dr. Ayoub Al-sayayda

لائحة الوقائع **وزارة الصحة**

رقم الكتاب وتاريخه	رقم الملف ورقم المعاملة
من مديرية تطوير الموارد البشرية	بخصوص السماح للطالب الدكتوراه في التمريض محمد وليد الحسين توزيع الاستبانة المرفقة

الرقم	التاريخ	إلى	المشروحات والتوقيع
١	٩/٥ ٢٠١٨	السادة مكاتب الشؤون التمريضية	للاطلاع وتسهيل مهمة الطالب ٩/٥/٢٠١٨
٢	٩/٥ ٢٠١٨	السادة	تحية طيبة وبعد نرفق لسيادتكم طيه كتاب مديرية الخدمات الطبية رقم ٢٠١٨/٥/٩ بخصوص طلب الدكتوراه في التمريض محمد وليد الحسين لتوزيع الاستبانة مع الشكر.

هاني نواف القضاه
مساعد مدير مستشفى البشير
لشؤون التمريض

عزيزي
للعلم
٢٠١٨/٥/٩
د. محمد الحسين

رئيس قسم التمريض
رئيسة التمريض

رئيس العيادات الخارجية
الدكتور نيازي كتاو

وزارة الصحة

الرقم تطوير الموارد البشرية/ ٢٩٧
التاريخ
الموافق ٦/٥/٢٠١٢

مدير عام مستشفى الأمير حمـــزة
مدير مديرية صحة محافظة العاصمة
مدير مستشفـــــى البشيـــــر
مدير مستشفـــى جميل التوتنجـــي

تحية طيبة وبعد ،،،

أرفـــق طيـــاً صورة عن كتـــاب رئيـــس لجنـــة أخلاقيـــات البحث العلمي رقم م ب أ / لجنة أخلاقيات / ٣١٢٠ تاريـــخ ٢٠١٢/٥/٢ بخصوص السماح لطالب الدكتوراه في التمريض **ممدوح ياسين الحنيطي** من جامعة كنجز كوليج / لندن إجراء بحث بعنوان :-

(دور الممرضين في تحسين الصحة وأمراض القلب والشرايين في الأردن)

وذلك عن طريق توزيع الإستبيان المرفق صورة عنه على الأطباء والممرضين والممرضات والمرضى بشكل عام في المراكز الصحية وأقسام الجراحة والباطني والعيادات الخارجية التابعة للمستشفيات .

أرجو التكرم بالإيعاز لمن يلزم تسهيل مهمة الباحث أعلاه .

واقبلوا الإحترام ،،،

مدير تطوير الموارد البشرية

الدكتور أيوب السيايدة

نسخة / الملف
س م
عدد الباحثين (١)

المملكة الأردنية الهاشمية
هاتف ٠٦٥٦٢٠٢٠ فاكس ٠٦٥٦٨٨٣٧٢ ص.ب ٨٦ عمان ١١١١٨ الأردن الموقع الإلكتروني www.moh.gov.jo

The Specialty Hospital

Date: 30/10/2012

Number: 5/1/T/68966

From: Ethics Approval Health Committee I.R.B

To: Student/ Mamdouh Yasein El-hneiti

Requesting to conduct an exploratory study in the Specialty Hospital entitled:

The Nurse's Role in Health Promotion and Cardiovascular Disease in Jordan

As it has been requested to conduct the study entitled above and after reviewing the study by the Ethics Approval Health Committee in 24/10/2012

We are delighted to agree to conduct the study with the following conditions:

1. Singed letter for confidentiality of information
2. Providing a copy of the research proposal and questionnaires
3. Informing the Ethics Approval Health Committee about the progress of the study
4. Providing the Ethics Approval Health Committee with the results of the research
5. Informing administrations of the Specialty Hospital before publish the research in any scientific journal.

Ethics Approval Health Committee

Dr. Fouzi Al-hamouri

التاريخ : ٢٠١٢/١٠/٣٠
الرقم : ٥/١/ت/٦٨٩٦٦

من : لجنة الآداب والسلوك الطبي I.R.B

إلى : الطالب / ممدوح الحنيطي المحترم

الموضوع: طلبكم بعمل دراسة استجوابية في المستشفى التخصصي بعنوان:
The Nurse's Role in Health Promotion and Cardiovascular Disease in Jordan

تحية طيبة وبعد ،،،

بناءً على الرسالة الموجهة من قِبلكم لعمل الدراسة أعلاه، وبعد مناقشة محتواها كما ورد في اجتماع لجنة الآداب والسلوك الطبي الأخير بتاريخ ٢٠١٢/١٠/٢٤.

يسرنا إعلامكم بأن اللجنة وافقت على إجراء الدراسة الاستجوابية أعلاه وحسب البروتوكول المرفق، شريطة:

١. أن يتم توقيع نموذج سرية المعلومات
٢. ان يتم تزويدنا بنسخة من الرسالة ومواد البحث والاستبيان
٣. أن يتم إعلام اللجنة بتطور وضع الدراسة أولاً بأول.
٤. أن يتم كتابة تعهد بإرسال نسخة من النتائج إلى اللجنة.
٥. أن لا يتم نشر هذه الدراسة في المحافل العلمية قبل الرجوع إلى إدارة المستشفى التخصصي.

مع تمنياتنا لكم بالتوفيق في مسعاكم

رئيس لجنة الآداب والسلوك الطبي

الدكتور / فوزي الحموري

عمان - الأردن - هاتف ٥٠٠١١١١ ٦ ٩٦٢+ فاكس ٥٦٩٧٤٢٥ ٦ ٩٦٢+ - ص.ب ٩٣٠١٨٦ عمان ١١١٩٣
Amman - Jordan - Tel. +962 6 5001111 - Fax. +962 6 5697425 - P.O.Box 930186 Amman 11193
E-mail : info@specialty-hospital.com - Website : specialty-hospital.com

بسم الله الرحمن الرحيم

G. H. Q. Jordan Armed Forces
DIRECTORATE
ROYAL MEDICAL SERVICES
Human Research Ethics Committee
Amman – Jordan

القيادة العامة للقوات المسلحة الأردنية
مديريـــــــــــة
الخدمـــــات الطبية الملكيـــة
لجنة اخلاقيات المهنة
عمان – الأردن

Date: 8th May , 2012 .

To :
Mr. Mamdouh El-hneiti
King's College London
London
United Kingdom

I am pleased to inform you that your application/ study proposal

***Title*:**
"Nurses role in health promotion and cardiovascular disease in Jordan "

Has been approved by the Royal Medical Services Human Research Ethics Committee) on 9/4/2012.

Dr. Nabil AL qaesi
Chairman of the Ethics committee
King Hussein Medical Center

ROYAL MEDICAL SERVICES
Professional Training Division
Amman - Jordan

مـــركـــز الخالـــــدي الطبـــي
مستشفى القلب والاختصاصات الشاملة
AL KHALIDI MEDICAL CENTER
A Heart & Comprehensive Specialty Hospital

27/05/2013

Dear Mr. Mamdouh El- hneiti,,,

The medical Ethics committee would like to inform you that the entitled study:

Study title:

"The nurse Role in health Promotion and Cardiovascular Disease in Jordan"

Has been approved the above titled to be conducted at Al Khalidi Medical Center after meeting the needed requirements.
Confirming that it is as a survey, educational/university none sponsored study.

I would like to confirm that the Ethical committee of Al Khalidi Medical Center constitutes and operates according to ICH-GCP guidelines and applicable local and institutional regulations.

Medical Director
Dr. Nael Abu Kaff

AL KHALIDI MEDICAL CENTER
الادارة العامة

P.O.Box 5955 Amman 11183 Jordan
Tel. 4644281-9 Fax 962-6 4616801
website: www.kmc.jo
E-mail: info@kmc.jo

Date: 08th, May.2012

Dear Mr Mamdouh El-hneiti;

The Medical Ethics Committee would like to inform you that the entitled study:

Study title :

"The Nurse Role in Health Promotion and Cardiovascular Disease in Jordan"

Has been approved the above titled to be conducted at Jordan Hospital after meeting the needed requirements. Confirming that it is as a survey, educational/university none sponsored study.

I would like to confirm that the Ethical committee of Jordan Hospital constitutes and operates according to ICH-GCP guidelines and applicable local and institutional regulations:

EC; Co-Chairperson

Dr. Saeb Hammoudi

JORDAN HOSPITAL ADMINISTRATION

شارع الملكة نور هاتف: ٥٦٠٨٠٨٠ – ٥٦٠٨٠٣٠ – فاكسميلي: ٥٦٠٧٥٧٥ ص.ب ٥٢٠٢٤٨ عمان – الأردن
Queen Nour Street Tel. 5608080 - 5608030 - Fax. 5607575 P.O.Box 520248 Amman - Jordan
E-mail : jorhos@jordan-hospital.com

AL-ESSRA HOSPITAL
AL-ULA for Medical Investments Co.

مستشفى الاسراء
شركة العلا للإستثمارات الطبية

حائز على شهادة الأعتماد الدولية لجودة الخدمات الصحية (JCIA)

Date: 6\8\2012

Mr.Mamdouh Yasein El.Hneiti

Alsalam Alaykum

It gives me pleasure to inform you that your written request to undertake a research entitles "The nurse's role in health promotion & cardiovascular disease in Jordan" has been approved, provided that it is carried out in accordance with the rules & regulations of the hospital.

Wishing you all the best,,,

General Director
Dr.Na'el Zidan Al-Masalha

GE 125

عمان - شارع الملكة رانيا العبدالله (مقابل مسجد الجامعة الأردنية) - هاتف : (٠٠٩٦٢ ٦ ٥٣٠٠٣٠٠) فاكس : (٠٠٩٦٢ ٦ ٥٣٤٧٨٨٨) - ص.ب ١٨١٧ - ١١٩٤١
Amman - Queen Rania Al Abdallah St. Tal.(00 962 6 5300300) Fax :(00962 6 5347888) - P.O.Box (1817) - 11941
Web site : www.essrahospital .com E-mail: info@essrahospital.com E-mail: essrahospital@essrahospital.com

IBN - AL HAYTHAM HOSPITAL
مستشفى ابن الهيثم
شركة مساهمة عامة

Date:12/7/2012

Mr.Mamdouh Yasein El-Hneiti

Alsalamu Alaykum

It gives me pleasure to inform you that your written request to undertake a research entitles "the nurse`s role in health promotion & cardiovascular disease in Jordan "has been approved, provided that it is carried out in accordance with the rules & regulations of the hospital.

wishing you all the best

Medical director
Dr. Zuhair Abu Fares

IBN AL HAYTHAM HOSPITAL
مستشفى ابن الهيثم

Tel: +962/6/5205555
Fax: +962/6/5516823
P.O Box: 940614
Amman 11194 Jordan
E-mail: info@ihh.com.jo
Web site: www.ibn-alhaytham-hospital.com

Amman Hospital

Date: 08/05/2012

To whom it may concern,

We as Amman Hospital agree to allow Mamdouh El-hneiti to undertake the data collection for his research in Amman Hospital.

Your Sincerely

General Manager

Dr. Basem Saeed

مستشفى عمان

التاريخ: 8/5/2012

لمن يهمه الامر

نحن مستشفى عمان الجراحي لا مانع لدينا من تسهيل مهمه الطالب /ممدوح الحنيطي في اجراءات الدراسة المطلوبة له في المستشفى .

واقبلوا فائق الاحترام ،،،

المدير العام
د.باسم سعيد

مستشفى عمان
مكتب المدير العام

جبل عمان - الدوار الثالث صندوق بريد ٨١٥٤٤٧ عمان ١١١٨٠ الأردن تلفون : ٤٦٤١٢٦١ - ٦ - ٠٠٩٦٢ فاكس : ٤٦٤١٢٦٠ - ٦ - ٠٠٩٦٢